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(U.S.) Geological Survey
Iowa City, IA

14 Apr 82

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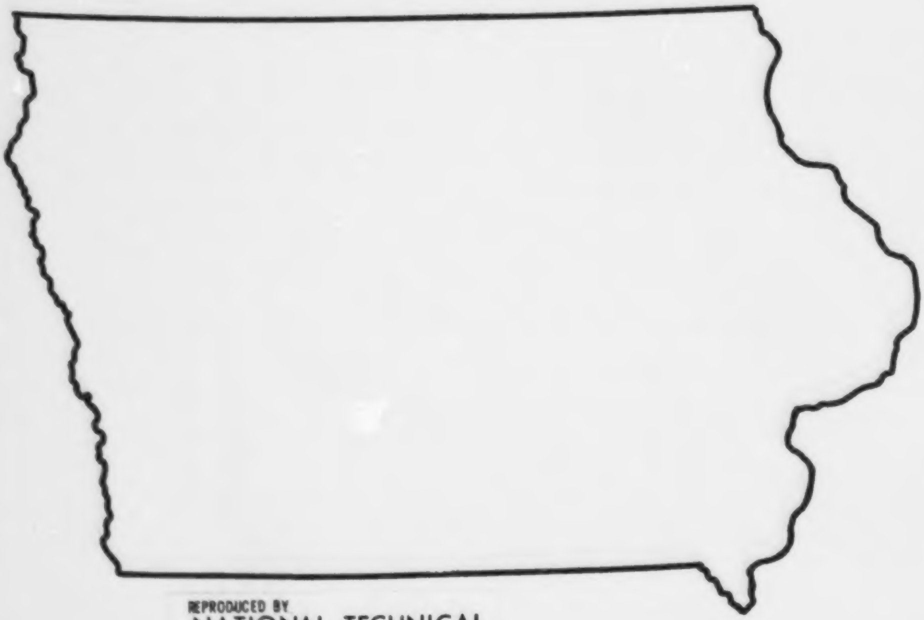
Iowa
Water Year 1981



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U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-81-1

Prepared in cooperation with the Iowa Geological
Survey and with other State and Federal agencies

CALENDAR FOR WATER YEAR 1981

1980

OCTOBER

S	M	T	W	T	F	S
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1981

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SEPTEMBER

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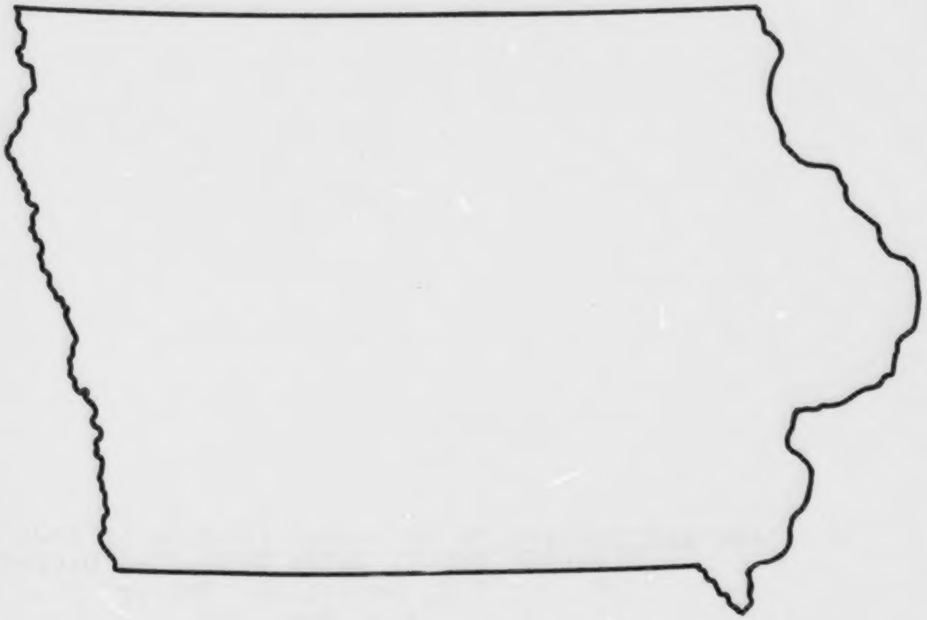
U.S. DEPARTMENT OF THE INTERIOR
March 3, 1849

Water Resources Data
Iowa
Water Year 1981



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-81-1
Prepared in cooperation with the Iowa Geological
Survey and with other State and Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in Iowa write to
District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

1982

Preface

This report was prepared by personnel of the Iowa district of the Water Resources Division of the U.S. Geological Survey under the supervision of O. G. Lara, Acting District Chief, and Alfred Clebsch, Jr., Regional Hydrologist, Central Region. It was done in cooperation with the State of Iowa and with other agencies.

This report is one of a series issued by Iowa. General direction for the series is by Philip Cohen, Jr., Chief Hydrologist, U. S. Geological Survey, and R. J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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Water resources data for the 1981 water year for Iowa consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells. This report contains discharge records for 119 gaging stations; stage and contents for 7 lakes and reservoirs; water quality for 25 gaging stations; and water levels for 34 observation wells. Also included are 124 crest-stage partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements and analyses. The data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Iowa.

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GAGING STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

[Letter after station name designates type of data:
(d) discharge, (c) chemical, (b) biological,
(m) microbiological, (t) water temperature, (s) sediment]

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WATER RESOURCES DATA FOR IOWA, 1981

INTRODUCTION

Water resources data for the 1981 water year for Iowa consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels of ground-water wells. This report contains records for water discharge at 119 gaging stations; stage or contents at 7 lakes and reservoirs; water quality at 25 gaging stations, and water levels at 34 observation wells. Also included are data for 124 crest-stage partial-record stations. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Iowa.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, Virginia, 22304.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports of in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-81-1." These water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief of the address given on the back of the title page or by telephone, (319) 337-4191.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreement with the Survey in 1981 are:

Iowa Geological Survey, Donald L. Koch, director and state geologist

University of Iowa, Institute of Hydraulic Research, Robert G. Hering, dean of College of Engineering and John F. Kennedy, director

Iowa Department of Transportation, Highway Division, Donald E. McLean, Director, and Vernon J. Marks, research engineer

Iowa State University, Richard E. Hasbrook, contracts and grants officer, and E. Robert Bauman Professor-in-charge; Department of Agricultural Engineering, C. W. Bockhop, head; and Engineering Research Institute, W. W. Sanders, Jr., assistant director.

City of Cedar Rapids, Donald Canney, mayor

City of Des Moines, Elaine Szymoniak, mayor protempore

City of Fort Dodge, Vincent B. Gardner, general manager, department of municipal utilities

City of Harlan, D. D. Burger, mayor

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting flow records for 77 gaging stations, and by the Environmental Protection Agency in collecting records for four water-quality stations published in this report. Assistance was also furnished by NOAA - National Weather Service, U.S. Department of Commerce.

The following organizations aided in collecting records:

Union Electric Co.; Des Moines Water Works; Hospers Rural Water System No. 1; Waterloo Sewage Treatment Plant; University of Iowa; West Central Iowa Rural Water Association; and cities of, Charles City, Clear Lake, Denison, Iowa City, Marshalltown, Sioux City, and Waterloo.

Organizations that supplied data are acknowledged in station descriptions.

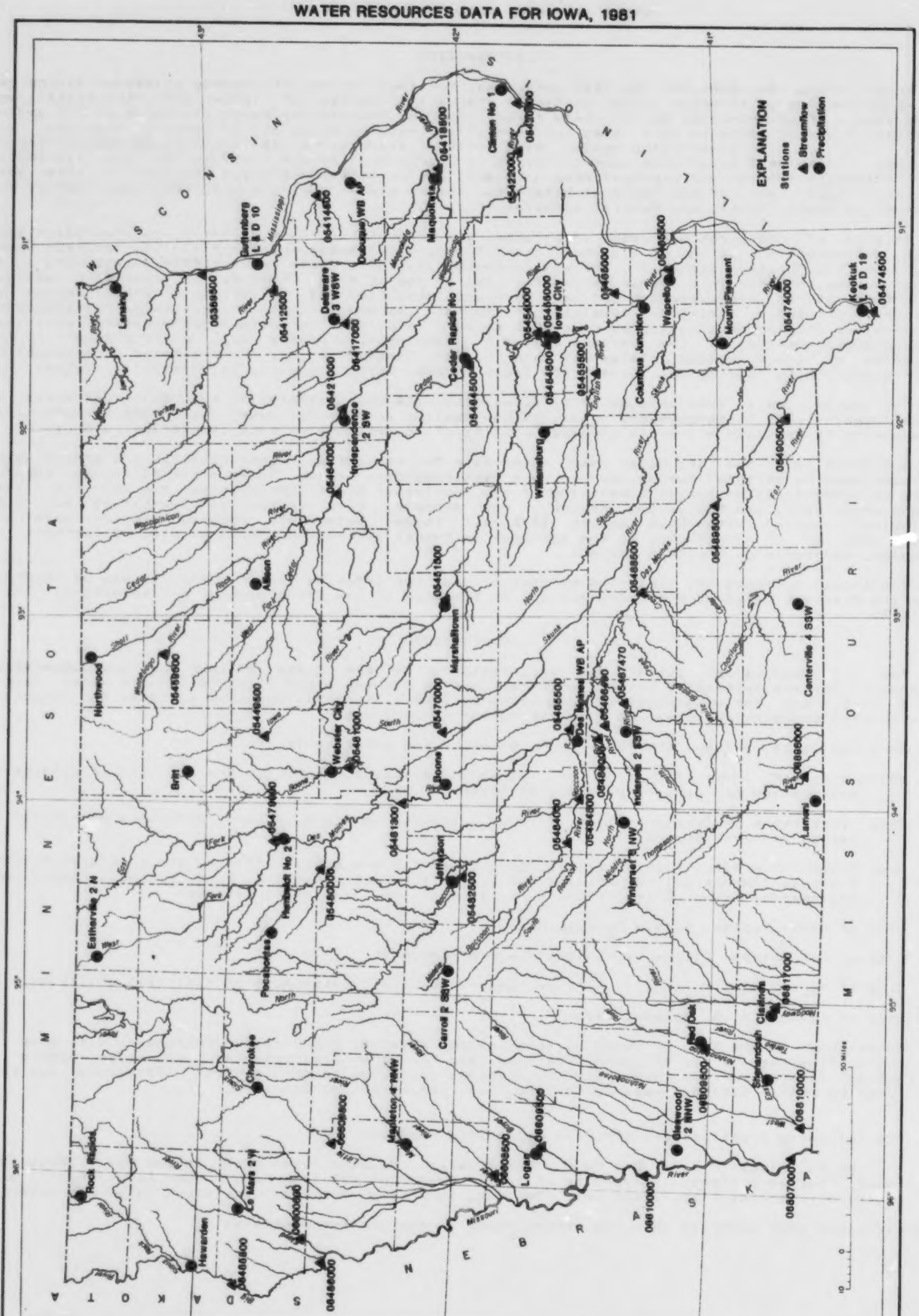

EXPLANATION
Stations
▲ Streamflow
● Precipitation
MINNESOTA
WISCONSIN
ILLINOIS
MISSOURI
NEBRASKA
SOUTH DAKOTA
Mississippi River
Missouri River
Des Moines River
Cedar River
Iowa River
Skunk River
43°
42°
41°
91°
92°
93°
94°
95°
96°
Keokuk L & D 19
Clinton No 1
Dubuque WB AP
Guttenberg L & D 10
Lansing
Cedar Rapids No 1
Iowa City
Des Moines WB AP
Marshalltown
Boone
Webster City
Humboldt No 2
Estherville 2 N
Northwood
Britt
Cherokee
Le Mars 2 W
Hawarden
Rock Rapids
Logan
Carroll 2 SSW
Jefferson
Williamsburg
Columbus Junction
Wapello
Mount Pleasant
Centerville 4 SSW
Lamoni
Shenandoah
Clarinda
Red Oak
Glenwood 2 NNW
Winterset 5 NW
Indianola 2 SSW
Independence 2 SW
Delaware 3 WSW
Maquoketa
Ames
Pocahontas
Manilla 4 NW
50 Miles

Figure 1.--Location of stations used in runoff and precipitation study.

ACKNOWLEDGMENT

Iowa district personnel who contributed significantly to the collection and preparation of the data in this report were: I. L. Burmeister, chief, Hydrologic Surveillance section, assisted by V. L. Spiers, P. J. Soenksen, R. E. Hansen, W. J. Matthes and V. E. Miller.

RUNOFF AND PRECIPITATION STUDY, STANDARD PERIOD 1941-70

Streamflow data for 48 stations in Iowa (fig. 1) with records available during the standard period 1941-70 were analyzed by computer program W4422 (daily values monthly and annual statistics). Mean values of monthly and annual discharges, in cubic feet per second, and runoff, in inches, were tabulated with the current year's data for these stations. The standard deviation of the runoff values are also included in each table. Please note that these values supersede those published in the 1980 data report.

Two additional studies were made regarding the monthly distribution of the mean runoff values for the standard period and the associated precipitation on the watershed of each streamflow station. The first study determined the percent of annual runoff for each month for each station. These values are tabulated as above. A regional analysis of these data was made which concluded that the distribution of runoff with respect to months for all of the stations throughout the State was quite similar. The averaged monthly percent of annual runoff summaries are presented graphically in figures 2 and 3.

Normal monthly and annual precipitation data for Iowa was provided by Paul Waite, State Climatologist, Iowa Department of Agriculture. The weighted average monthly precipitation data for Iowa are presented as percent of annual (fig. 4) for comparison to that of the runoff distribution. The runoff characteristics vary from the precipitation characteristics during several months. Runoff for February and March increases at a greater rate than precipitation because of the melting of snow that has accumulated from the previous months. The decreasing rate of runoff for April and May reflects the seasonal change in evapotranspiration and infiltration capability. Runoff during July through September decreases at a faster rate than precipitation because of the large evapotranspiration losses during the peak growing season. Runoff and precipitation distribution during the fall and winter when vegetation is dormant compares very well.

The second study analyzed the normal monthly and annual precipitation for the same standard period at 40 stations of the National Weather Service (fig. 1). A reference precipitation station was paired with a nearby streamflow station in the runoff study. The annual precipitation at this station and other precipitation stations throughout the watershed of the streamflow station were analyzed by the isohyetal method to determine the normal annual mean for the watershed. The coefficient required to adjust the annual value of the reference station to the weighted value of the watershed was then applied to each of the monthly values of the reference station. These adjusted monthly and annual precipitation values for the watershed are tabulated for each streamflow station in the study with the current year's data as above.

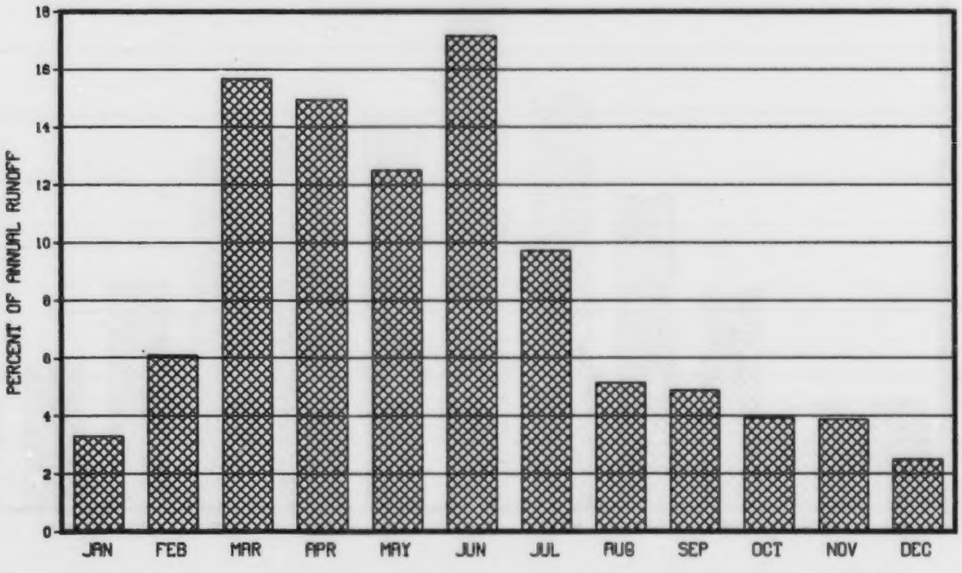


FIGURE 2.--RUNOFF DISTRIBUTION, IN PERCENT OF ANNUAL, BY MONTHS FOR IOWA STREAMS.

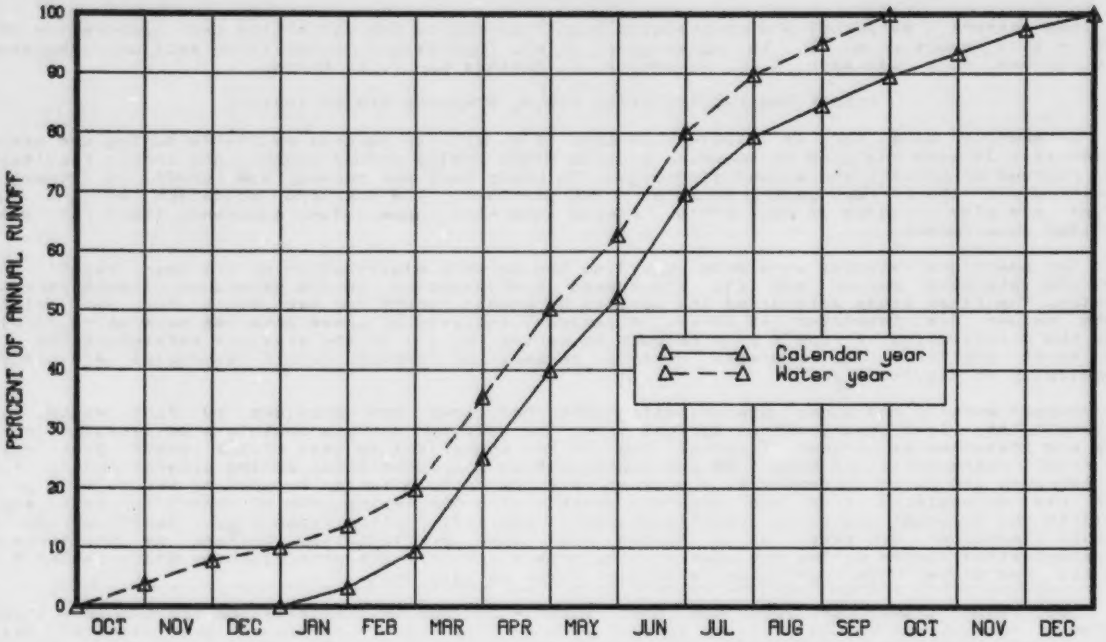


FIGURE 3.--ACCUMULATIVE RUNOFF, IN PERCENT OF ANNUAL, FOR CALENDAR AND WATER YEAR FOR IOWA STREAMS. (STANDARD PERIOD, 1941-70)

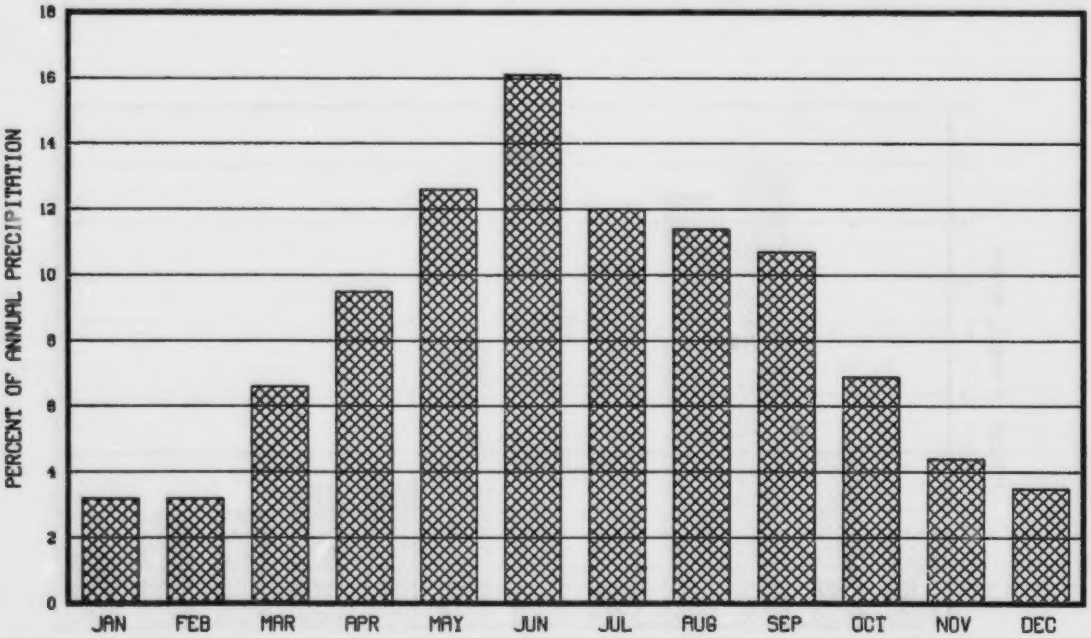


FIGURE 4.--PRECIPITATION DISTRIBUTION, IN PERCENT OF ANNUAL, BY MONTHS FOR IOWA. (STANDARD PERIOD, 1941-70)

SUMMARY OF HYDROLOGIC CONDITIONS

Almost two-thirds of the State had below normal runoff during the 1981 water year. Normal runoff varies from 2 inches in the Northwest to 8 inches in the Southeast. This year, because of deficient precipitation, runoff from the entire western one-third of the State and from an area extending from the central part of the State southeastward through the Skunk River basin was below normal. Less than 1 inch of runoff occurred in parts of the central area that normally has 5 to 6 inches.

Two areas, however, had excessive runoff. Runoff from much of northeastern and east-central Iowa, which includes the Upper Iowa, Turkey, Maquoketa, Wapsipinicon, Winnebago Rivers and the upper part of the Cedar River, totaled 9 to 11 inches. In southern Iowa, the Chariton River and South Fork Chariton River basins had 8 to 12 inches of runoff compared to the normal of 7 inches. Much of this excess was the result of intense thunderstorms during the July 4th weekend that caused record floods in the area.

The water year began with normal streamflow in the southwest and excessive flows throughout the remainder of the State. October and November generally were dry. Streamflow decreased but remained in the normal range. During early December, rains and thunderstorms in the central and southern parts of the State caused several streams in those areas to reach flood stage. Streamflow for the three index stations (fig. 7) remained at or slightly above normal. Mild and dry weather predominated during January and the first 3 weeks in February causing streamflow to decrease. Rains of 1 inch and snowfall of 1 to 6 inches, that soon melted during the fourth week in February, did help the deficient soil-moisture condition but caused only a slight increase in streamflow. Precipitation during March was nil and streamflow decreased steadily. Streamflow for all index stations was then deficient. Scattered showers and thunderstorms occurred mostly over the eastern part of the State during April and May. However, there was concern of a drought because of the minimal soil-moisture conditions. Streamflow increased slightly during April but decreased steadily during May. Streamflow at the index station on the Cedar River at Cedar Rapids was in the normal range but was deficient at the index stations on the Des Moines River at Ft. Dodge and Nishnabotna River above Hamburg.

Intense rains and frequent showers during June and July throughout the State except the southwestern and extreme western parts cancelled the threat of drought. During June, 4 to 9 inches of rain fell on the upper reaches of the Iowa, Cedar and Des Moines River basins that caused floods on the Winnebago, Boone, Iowa and Des Moines Rivers. New record floods on July 4 on the South River, Whitebreast Creek, Cedar Creek, Chariton and South Fork Chariton Rivers were caused by intense rains during the preceding days. Soaking rains of as much as 4 inches followed by a downpour of 5 to 12 inches caused severe flooding and damage to crops, bridges, roads, and personal property. Two lives were lost in Clarke County when a car was washed off the highway near Jamison in the South River basin. Streamflow at the index stations on the Cedar and Des Moines Rivers was excessive and that at the index station on the Nishnabotna River remained deficient. Weather conditions moderated considerably during August and September and streamflow decreased steadily. A few minor flood peaks did occur during early September. Streamflow in the southwestern and extreme western parts remained in the deficient range for the 7th consecutive month. Streamflow at the Cedar and Des Moines River index stations was excessive for the 3rd month but flow at both stations was in the normal range at the end of the year.

Water levels in shallow wells generally were at or slightly below normal during the first 6 months of the water year. The levels rose in all areas except the extreme west during April but declined to below average during May. Intense rains during June and July caused levels to rise above normal except in the extreme west and southwest where they were still below normal. Most water levels continued to rise during August although there was little precipitation. Water levels in shallow wells in Johnson County reached the highest level for the past 30 years. Levels declined during September. The year ended with those in the eastern two-thirds of the State above normal and the west below normal.

DEFINITION OF TERMS

Terms related to streamflow, water-quality and other hydrologic data, as used in this report, are defined below. See also table for converting English Units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer, tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-ft, about 646,000 gallons or 2,445 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, total fluid), plus suspended sediment that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless other-wise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water togetner with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used inter-changeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/l) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/l, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytolplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (ml) or liters (l). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Sub-committee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay..........	0.00024 - 0.004	Sedimentation.
Silt..........	.004 - .062	Sedimentation.
Sand..........	.062 - 2.0	Sedimentation or sieve.
Gravel........	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillionth (1×10^{12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of choirinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measureing the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/)m^2.time) for periphyton and macrophytes and mg C/(m^3.time)] for periphyton and macrophytes and mg C/m^3.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O_2/m^2.time) for periphyton and macrophytes and mg C/(mg O_2/(m^3.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that passes a section in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Suspended-sediment load is quantity of suspended sedi-ment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of indi-vidual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification and each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 05387500, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "387500."

Downstream order station numbers are not assigned to miscellaneous sites where only random water-quality samples or discharge measurements are taken.

NUMBERING SYSTEM FOR WELLS

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The former number serves not only to identify the well but also to locate it as a point on a map. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits represent degrees, minutes, and seconds of latitude; "N" refers to north latitude and is used to break the string of numbers; the next seven digits are degrees, minutes, and seconds of west longitude; and the number after the decimal point is a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

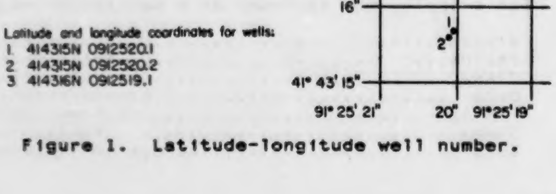


Figure 1. Latitude-longitude well number.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is situated. The letters after the section number which are assigned in a counter-clockwise direction (beginning with "a" in the northeast quarter), represent subdivisions of the section. The first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3cdbdl designates the well in the SE1/4 NW1/4 SE1/4 SW1/4 sec.3, T.96 N., R.20 W.

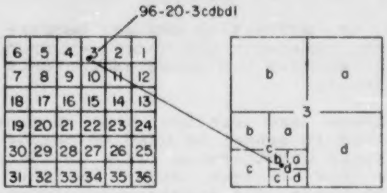


Figure 2. Local well numbering system for well 96-20-3cdbdl.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nations's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise, daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging stations gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision , the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum (NGVD) is explained in "DEFINITION OF TERMS" on page 4.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage or contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is published for most reservoirs.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented as a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of data

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables, is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Records of discharge collected by agencies other than the Geological Survey

Records of discharge not published by the Geological Survey were collected during water year 1981 at several sites in Iowa by the Corps of Engineers, U.S. Army. The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of such sites. Information on records available at specific sites can be obtained upon request.

EXPLANATION OF WATER QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on the next page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-qaulity conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Although these temperatures are measured on different days of the month, an analysis of these data for each month for a long period of record will indicate significant thermal characteristics of the stream. Data have been analyzed for the period of record through 1974 for gaging stations with 10 or more years of record. A summary on monthly maximum, minimum and mean temperatures were published in the 1974 water data report. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharge.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples are collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic national network of observation wells are published herein. These water-level measurements are intended to provide a sampling and historical record of water-level changes in the nation's most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude, and (2) a local number that is provided for local needs. See figures 1 and 2.

Measurements are made in many types of wells under varying conditions of access and of diffferent temperatures, hence neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will insure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of depth to water of several hundred feet, the error of derterminning the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reportted to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water, The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. Water temperature--influential factors, field measurements, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
2-D1. Application of surface geophysics to ground-water resources investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
3-A11. Measurements of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
3-B2. Introduction to ground-water hydraulics, a programed text for self-instruction, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS (Continued))

4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1969. 39 pages.

4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.

4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3, 1973. 15 pages.

4-D1. Computation of rate and volume of stream depletion by wells, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1, 1970. 17 pages.

5-A1. Methods for determination of inorganic substances in water and fluvial sediments, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979, 626 pages.

5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.

5-A3. Methods for analysis or organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.

5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4, 1977. 332 pages.

5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.

7-C1. Finite difference model for aquifer simulation in two dimensions with results of numerical experiments, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. Computer model of two-dimensional solute transport and dispersion in ground water, by L. F. Konikow and J. D. Bredenhoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.

8-B2. Calibration and maintenance of vertical-axis type current meters, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

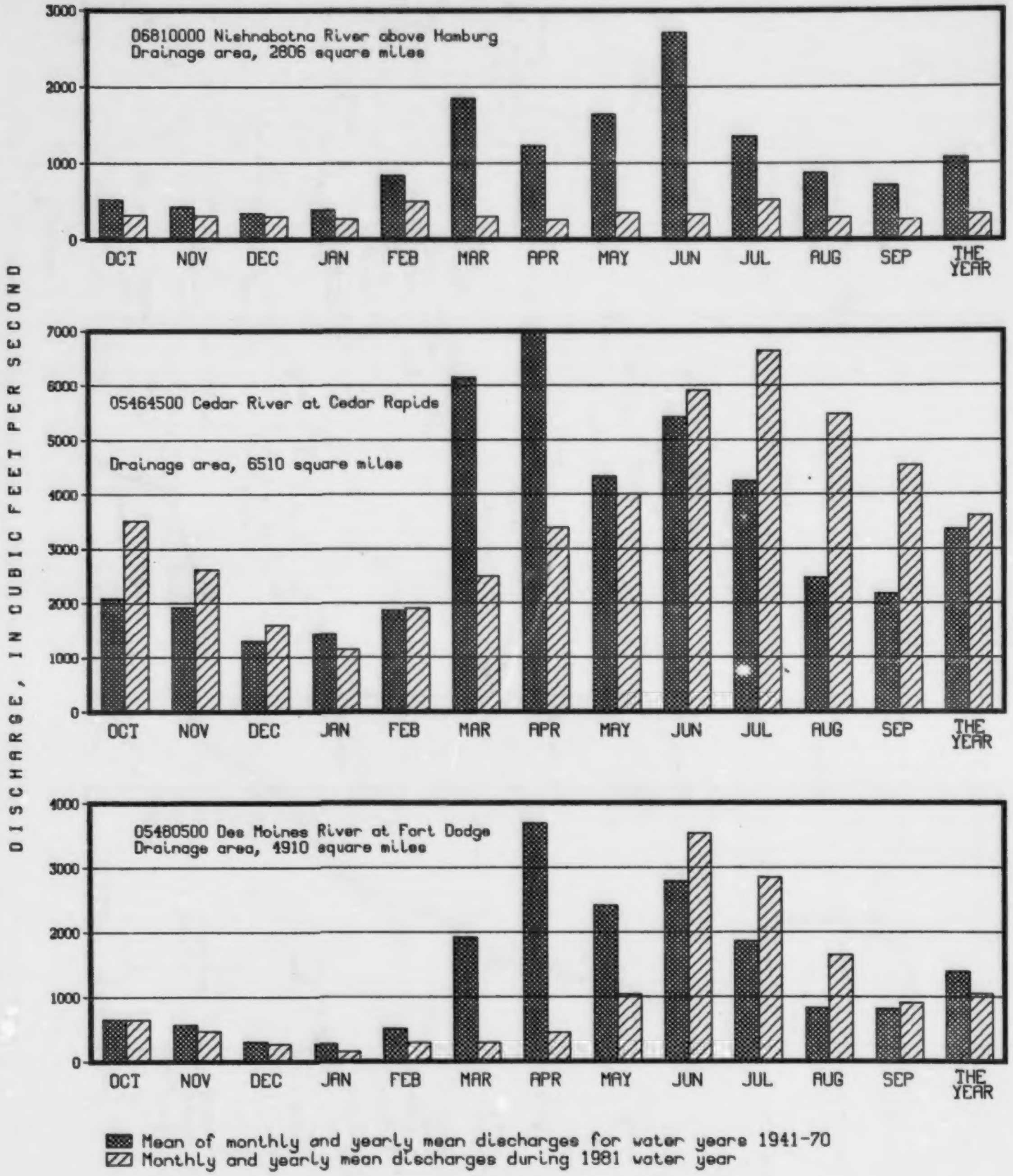
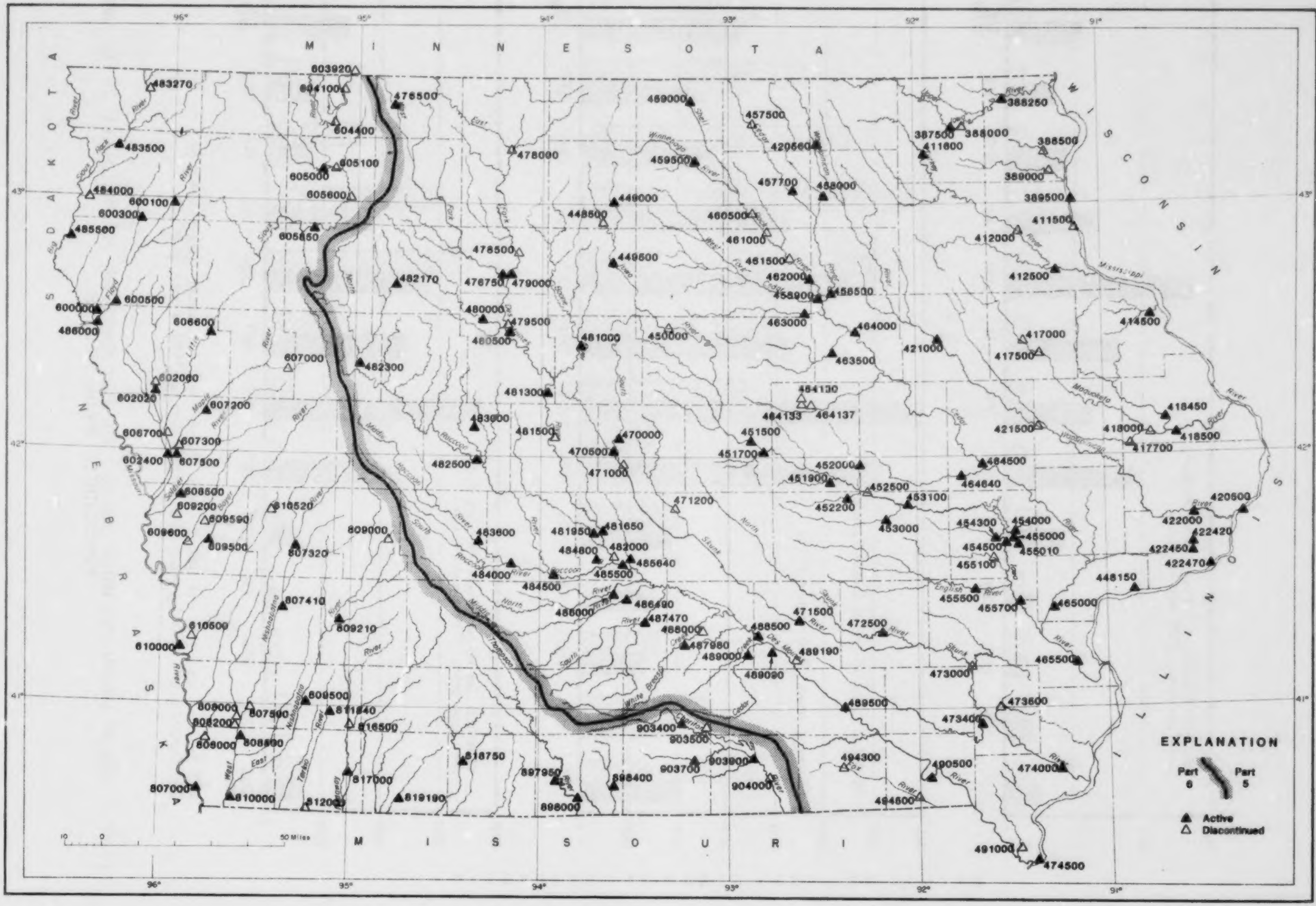


FIGURE 7.--RUNOFF DURING 1981 WATER YEAR COMPARED WITH MEAN RUNOFF FOR PERIOD 1941-70 FOR THREE REPRESENTATIVE GAGING STATIONS.


MINNESOTA
WISCONSIN
ILLINOIS
MISSOURI
NEBRASKA
SOUTH DAKOTA
96°
95°
94°
93°
92°
91°
43°
42°
41°
EXPLANATION
Part 6
Part 5
Active
Discontinued
10 0 50 Miles
603920
604100
604400
605100
605000
605600
605850
476500
483270
483500
484000
600100
600300
485500
600000
600500
486000
606600
607000
602000
602020
607200
606700
607300
602400
607500
608500
609200
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609500
616520
607320
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808500
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484500
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485500
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486000
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489000
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489090
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471500
472500
449000
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449500
481000
450000
470000
470500
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457500
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457700
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460500
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461500
462000
458900
456500
463000
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463500
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452000
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389500
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412000
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417000
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421000
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418000
418500
417700
421500
464500
464640
420500
422000
422420
422450
422470
454300
454000
455000
454500
455010
455100
455500
455700
448150
465000
465500
473000
473600
473400
474000
489500
494300
490500
494500
491000
474500
Mississippi
River
Des Moines
Skunk
Iowa
Cedar
Wapsipinicon
Winnebago
Shell
Raccoon
Boone
Missouri
Nishnabotna
Nodaway
Thompson
Floyd
Big Sioux
Rock
Little Sioux
Maple
Soldier
Tarkio
English
Maquoketa
Fox

Figure 8.-Location of continuous-record gaging stations in Iowa.

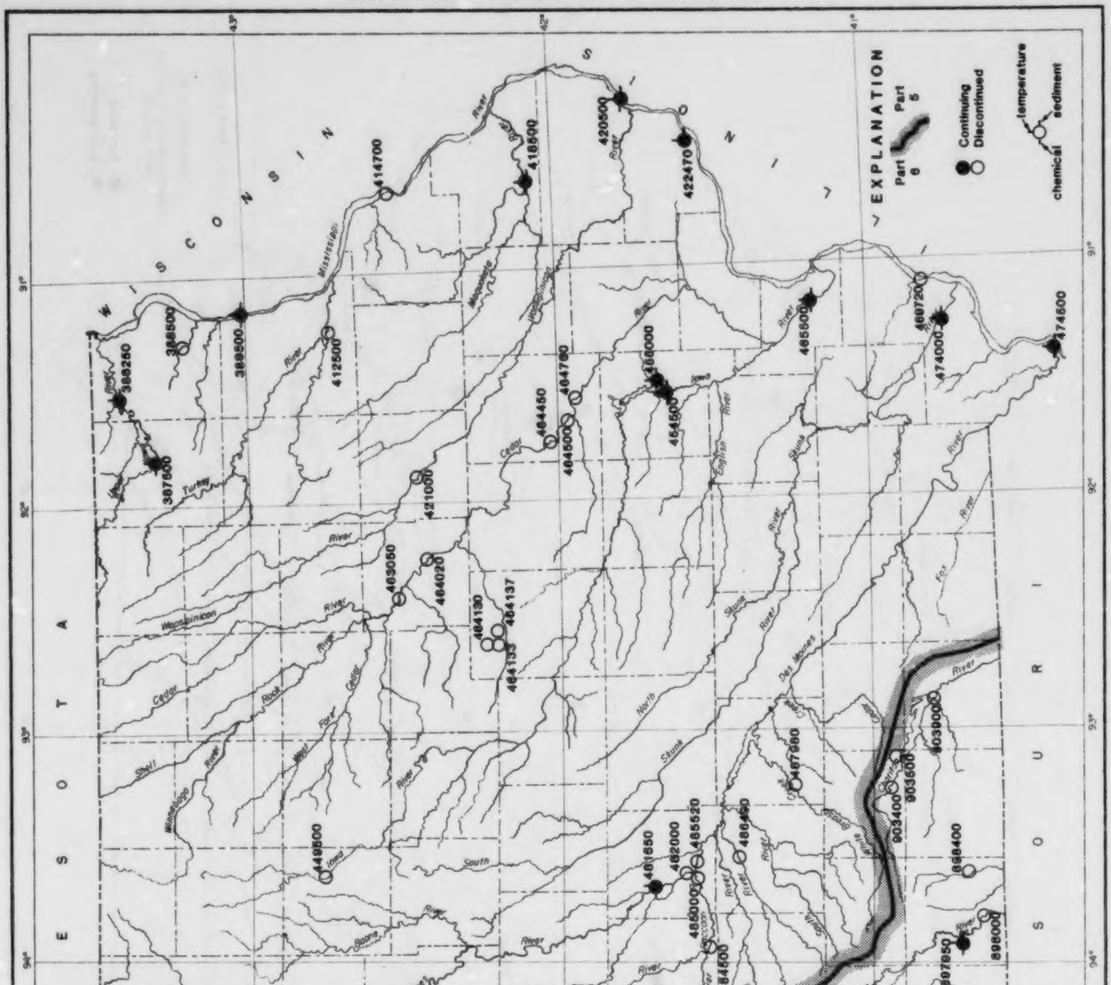
MINNESOTA
WISCONSIN
ILLINOIS
MISSOURI
NEBRASKA
SOUTH DAKOTA
EXPLANATION
Part 6
Part 5
Continuing
Discontinued
chemical
temperature
sediment
50 Miles
43°
42°
41°
91°
92°
93°
94°
95°
96°
Mississippi River
Missouri River
Des Moines River
Cedar River
Iowa River
Skunk River
414700
416500
420500
422470
388250
388500
389500
387500
412500
421000
463050
464020
464130
464137
464133
464450
464500
464780
465000
465450
465500
465720
474000
474500
449500
461650
462000
465520
466450
467950
480500
483000
483450
483500
484500
485000
903400
903500
903600
906400
907950
908000
916750
917000
806500
810000
807000
801000
808000
809000
606700
601200
607510
608500
609200
609500
609800
600520
600520
485640
486000

Figure 9.-Location of water-quality stations in Iowa.

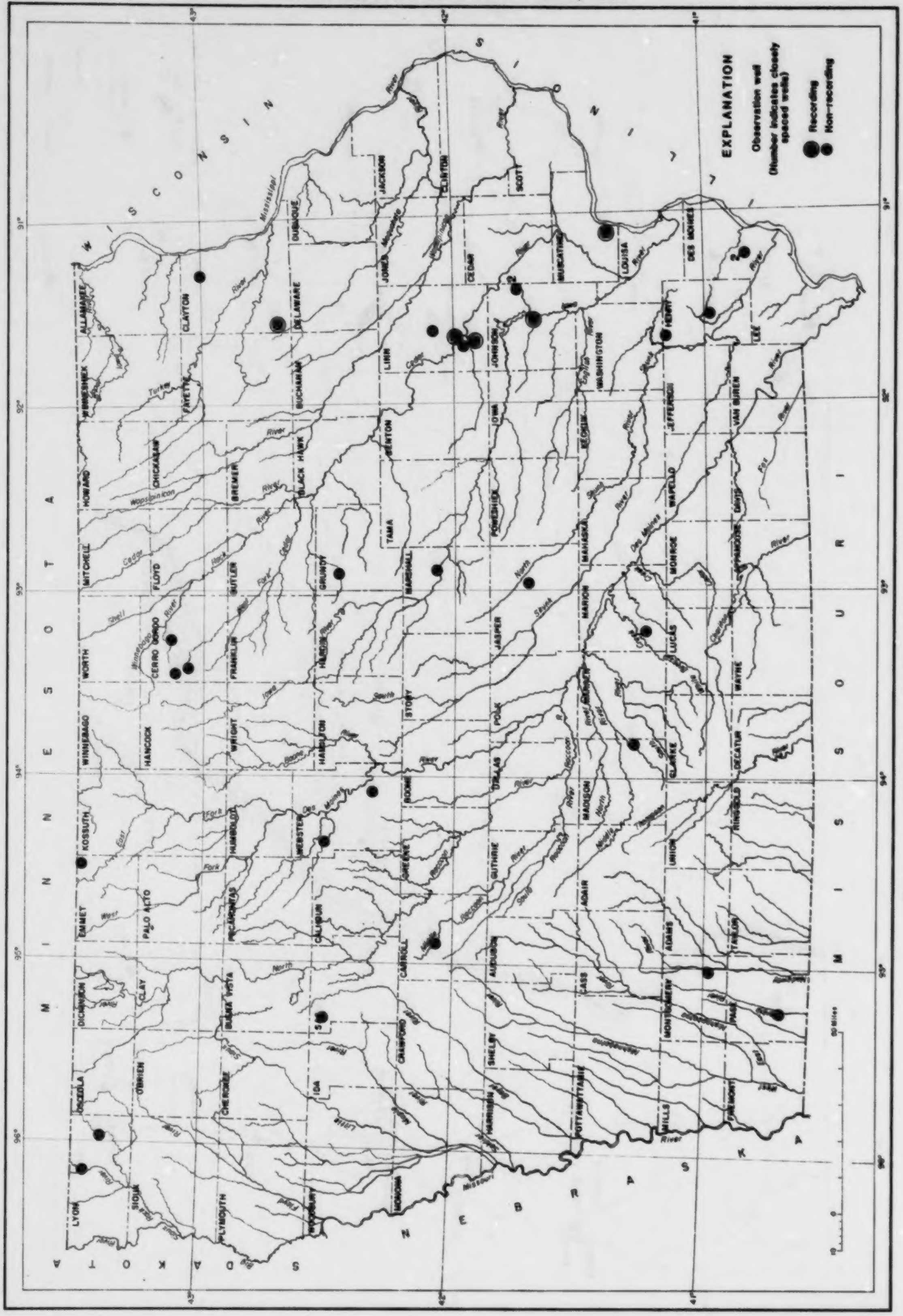
EXPLANATION
Observation well (Number indicates closely spaced wells)
● Recording
● Non-recording
M I N N E S O T A
W I S C O N S I N
I L L I N O I S
M I S S O U R I
N E B R A S K A
S O U T H D A K O T A
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
IOWA
JOHNSON
CEDAR
CLINTON
SCOTT
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE
Mississippi River
Missouri River
Des Moines River
Cedar River
Iowa River
Skunk River
Wapsipinicon
Turkey River
Maquoketa
Raccoon River
Boone River
Little Sioux
Big Sioux
Rock River
Nishnabotna
Nodaway
Thompson
Chariton River
Grand River
Fox River
Shell Rock River
Winnebago River
Floyd River
Soldier
Boyer
North Raccoon
Middle Raccoon
South Raccoon
English River
Iowa
43°
42°
41°
91°
92°
93°
94°
95°
96°
0 10 20 30 Miles
2
2
5
3

Figure 10.-Location of observation wells in Iowa.

DISCONTINUED GAGING STATIONS

The following stream-gaging stations have been discontinued in Iowa. Continuous daily streamflow records were collected and published for the period of record shown for each station.

Discontinued gaging stations

Station name	Station number	Drainage area (sq mi)	Period of record
Upper Iowa River near Decorah, Iowa.	05388000	568	1913-14; 1919-27; 1933-51.
Paint Creek at Waterville, Iowa.	05388500	42.8	1952-73.
Yellow River at Ion, Iowa.	05389000	221	1934-51.
Mississippi River at Clayton, Iowa.	05411500	9,200	1930-36.
Turkey River at Elkader, Iowa.	05412000	891	1932-42.
Maquoketa River near Manchester, Iowa.	05417000	305	1933-73.
Maquoketa River near Delhi, Iowa.	05417500	347	1933-40.
Bear Creek near Monmouth, Iowa.	05417700	61.3	1957-76.
Maquoketa River above North Fork Maquoketa River near Maquoketa, Iowa.	05418000	938	1913-14.
Wapsipinicon River at Stone City, Iowa.	05421500	1,324	1903-14.
Eagle Lake inlet near Britt, Iowa.	05448285	3.83	1975-80.
Eagle Lake outlet near Britt, Iowa.	05448290	11.3	1975-80.
West Branch (West Fork) Iowa River near Klemme, Iowa.	05448500	112	1948-58.
Iowa River near Iowa Falls, Iowa.	05450000	565	1911-14.
Upper Pine Lake at Eldora, Iowa.	05450500	14.9	1936-70.
Lower Pine Lake at Eldora, Iowa.	05451000	15.9	1936-70.
Iowa River near Belle Plaine, Iowa.	05452500	2,455	1939-59.
Lake Macbride near Solon, Iowa.	05453500	27.0	1936-71.
Old Mans Creek near Iowa City, Iowa.	05455100	201	1950-64.
Cedar River at Mitchell, Iowa.	05457500	826	1933-42.
Shell Rock River at Marble Rock (Greene), Iowa.	05460500	1,318	1933-53.
Shell Rock River at Greene, Iowa.	05461000	1,357	1933-42.
Shell Rock River near Clarksville, Iowa.	05461500	1,626	1915-27; 1932-34.
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	1962-67; 1969-74; 1976-80.
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	1962-67; 1969-74; 1976-80.
Fourmile Creek near Traer, Iowa.	05464137	19.51	1962-74; 1975-80.
South Skunk River below Squaw Creek near Ames, Iowa.	05471000	556	1952-79.
Indian Creek near Mingo, Iowa.	05471200	276	1958-75.
Lake Keomah near Oskaloosa, Iowa.	05472000	3.06	1936-71.
Skunk River at Coppock, Iowa.	05473000	2,916	1913-44.
Big Creek near Mount Pleasant, Iowa.	05473500	106	1955-79.
East Fork Des Moines River near Burt, Iowa.	05478000	462	1971-74.
East Fork Des Moines River near Hardy, Iowa.	05478500	1,268	1940-54.
Des Moines River near Fort Dodge, Iowa.	05479500	3,753	1911-13.
Des Moines River near Boone, Iowa.	05481500	5,511	1920-68.
Des Moines River at Des Moines, Iowa.	05482000	6,245	1905-06; 1915-61.
Storm Lake at Storm Lake, Iowa.	05482140	28.3	1970-75.
Springbrook Lake near Guthrie Center, Iowa.	05483500	5.18	1936-71.
Raccoon River at Des Moines, Iowa.	05485000	3,590	1902-03.
Lake Ahquabi near Indianola, Iowa.	05487000	4.93	1936-71.
White Breast Creek near Knoxville, Iowa.	05488000	380	1945-62.
Lake Wapello near Drakesville, Iowa.	05490000	7.75	1936-71.
Sugar Creek near Keokuk, Iowa.	05491000	105	1922-31; 1958-73.
Muchakinock Creek near Eddyville, Iowa.	05489190	70.2	1975-79.
Fox River at Bloomfield, Iowa.	05494300	87.7	1957-73.
Fox River at Cantril, Iowa.	05494500	161	1940-51.
Rock River at Rock Rapids, Iowa.	06483270	788	1959-74.
Dry Creek at Hawarden, Iowa.	06484000	48.4	1948-69.
West Fork ditch at Holly Springs, Iowa.	06602000	399	1939-69.
Loon Creek near Orleans, Iowa.	06603920	31	1971-74.
Spirit Lake outlet at Orleans, Iowa.	06604100	75.6	1971-74.
Milford Creek at Milford, Iowa.	06604400	146	1971-74.
Little Sioux River at Spencer, Iowa.	06605100	990	1936-42.
Little Sioux River at Gillett Grove, Iowa.	06605600	1,334	1958-73.
Little Sioux River near Kennebeck, Iowa.	06606700	2,738	1939-69.
Odebolt Creek near Arthur, Iowa.	06607000	39.3	1957-75.
Maple River at Turin, Iowa.	06607300	725	1939-41.
Little Sioux River near Blencoe (Turin), Iowa.	06607510	4,470	1939-42.
Steer Creek near Magnolia, Iowa.	06609200	9.26	1963-69.
Thompson Creek near Woodbine, Iowa.	06609590	6.97	1963-69.
Willow Creek near Logan, Iowa.	06609600	129	1972-75.
Indian Creek at Council Bluffs, Iowa.	06610500	7.99	1954-76.
Mosquito Creek near Earling, Iowa.	06610520	33.0 (revised)	1965-79.
Waubonsie Creek near Bartlett, Iowa.	06806000	30.4	1946-69.
West Nishnabotna River at (near) White Cloud, Iowa.	06807500	967	1918-24.
Mule Creek near Malvern, Iowa.	06808000	10.6	1954-69.
Spring Valley Creek near Tabor, Iowa.	06808200	7.6	1955-64.
Davids Creek near Hamlin, Iowa.	06809000	26.0	1952-73.
Milford Creek at Milford, Iowa.	06604400	146	1971-74.5
West Nodaway River at Villisca, Iowa	06816500	342	1918-25.
Honey Creek near Russell, Iowa.	06903500	13.2	1952-62.
Chariton River near Centerville, Iowa.	06904000	708	1938-59.

DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature or sediment and monthly or periodic samples of chemical quality were collected and published for the period of record shown for each station. An asterisk (*) in the type of record column indicates that periodic data is available for that parameter subsequent to the period of daily record.

Discontinued water-quality stations

Station name	Station number	Drainage area (sq mi)	Type of Record	Period of record
Paint Creek at Waterville, Iowa.	05388500	42.8	Temp	1952-56
			Sed.	1952-57
Turkey River at Garber, Iowa.	05412500	1,545	Temp.	1957-62
			Sed.	1957-62
Mississippi River at Dubuque, Iowa.	05414700	1,600	Chem.	1969-73
Wapsipinicon River at Independence, Iowa.	05421000	1,048	Chem. *	1968-70
			Temp. *	1967-70
			Sed. *	1967-70
Iowa River near Rowan, Iowa.	05449500	429	Temp. *	1957-62
			Sed. *	1957-62
Cedar River at Cedar Falls, Iowa.	05463050	4,734	Chem.	1975-79
Cedar River near Gilbertville, Iowa.	05464020	5,234	Chem.	1971; 1975-81
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Fourmile Creek near Traer, Iowa.	05464137	19.51	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Cedar River near Palo, Iowa.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Iowa.	05464500	6,640	Chem. *	1906-07; 1944-54
			Temp. *	1944-54
			Sed.	1943-54
Cedar River near Bertram, Iowa.	05464760	6,955	Chem.	1975-81
Mississippi River at Burlington, Iowa.	05469720	4,000	Chem.	1969-73
Des Moines River at Fort Dodge, Iowa.	05480500	4,190	Chem.	1972-73
Des Moines River at Des Moines, Iowa.	05482000	6,245	Chem.	1954-55
			Temp.	1954-61
			Sed.	1954-61
E. Fork Hardin Creek near Churdan, Iowa.	05483000	24.0	Temp. *	1952-57
			Sed. *	1952-57
Raccoon River at Van Meter, Iowa.	05484500	3,441	Chem.	1969-73; 1974-79
Raccoon River at Des Moines, Iowa.	05485000	3,590	Chem.	1945-47
			Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Iowa.	05485500	9,770	Chem. *	1944-45
			Temp. *	1944-47
			Sed.	1944-47
Des Moines River below Des Moines, Iowa.	05485520	9,901	Chem.	1971; 1975-81
Middle River near Indianola, Iowa.	05486490	503	Temp. *	1962-67
			Sed.	1962-67
White Breast Creek near Dallas, Iowa.	05487980	342	Chem.	1968-73
			Temp.	1967-73
			Sed.	1967-73
Big Sioux River at Sioux City, Iowa.	06485950	9,410	Chem.	1969-73
Floyd River at James, Iowa.	06600500	882	Temp.	1968-73
			Sed.	1968-73
Floyd River at Sioux City, Iowa.	[illegible]520	921	Chem.	1969-73
Missouri River at Decatur, Nebr.	[illegible]200	316,160	Chem.	1974-81
Little Sioux River at Correctionville, Iowa.	[illegible]6600	2,500	Chem. *	1954-55
			Temp. *	1951-62
			Sed.	1950-62
Little Sioux River near Kennebec, Iowa.	06606700	2,738	Temp.	1950-55
			Sed.	1950-57
Little Sioux River at River Sioux, Iowa.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Iowa.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Iowa.	06609200	9.26	Temp.	1963-69
			Sed.	1963-69
Thompson Creek near Woodbine, Iowa.	06609590	6.97	Temp.	1963-69
			Sed.	1963-69
Willow Creek near Logan, Iowa.	06609600	129	Chem.	1972-75
			Temp.	1972-75
			Sed.	1971-75
Missouri River at Nebraska City, Nebraska.	06807000	410,000	Chem.	1951-77
			Temp.	1951-77
			Sed.	1971-76
Mule Creek near Malvern, Iowa.	06808000	10.6	Temp.	1958-69
			Sed.	1954-69
Davids Creek near Hamlin, Iowa.	06809000	26.0	Temp. *	1952-53; 1965-68
East Nishnabotna River at Red Oak, Iowa.	06809500	894	Temp.	1962-73
			Sed.	1962-73
Platte River near Diagonal, Iowa.	06818750	217	Chem.	1969-73
Thompson River at Davis City, Iowa.	06898000	701	Chem.	1967-73
			Temp.	1968-73
			Sed.	1968-73
Weldon River near Leon, Iowa.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Iowa.	06903400	182	Temp.	1969-73
			Sed.	1969-73
Honey Creek near Russell, Iowa.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Iowa.	06903900	551	Temp. *	1962-69
			Sed. *	1962-69

Type of record: Chem. (chemical quality); Temp. (water temperature); Sed. (sediment).

05387500 UPPER IOWA RIVER AT DECORAH, IA

LOCATION.--Lat 43°18'19", long 91°47'48", in NE1/4 SW1/4 sec.16, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on right bank 1,200 ft (366 m) upstream from bridge on U.S. Highway 52 (city route) in Decorah, 1,500 ft (457 m) downstream from Dry Run cutoff, and 3.0 mi (4.8 km) upstream from Trout Run.

DRAINAGE AREA.--511 mi^2 (1,323 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1951 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft (259.080 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--30 years, 306 ft^3/s (8.666 m^3/s), 8.13 in/yr (206 mm/yr), 221,700 acre-ft/yr (273 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft^3/s (572 m^3/s) Mar. 27, 1961, gage height, 13.08 ft (3.987 m); minimum daily, 22 ft^3/s (0.62 m^3/s) Feb. 2-7, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood known, probably since at least 1913, occurred May 29, 1941, at site of former gaging station near Decorah, 4 mi (6.4 km) downstream, discharge, 28,500 ft^3/s (807 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,190 ft^3/s (90.3 m^3/s) Aug. 31, gage height, 7.26 ft (2.213 m), no peak above base of 4,000 ft^3/s (113 m^3/s); minimum daily, 84 ft^3/s (2.38 m^3/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	543	373	200	145	106	700	268	482	269	218	259	2180
2	508	359	174	138	99	560	259	470	262	222	417	1390
3	471	347	150	133	92	460	338	440	254	210	422	966
4	449	336	190	127	89	400	1690	425	244	203	422	781
5	427	329	217	124	91	350	959	437	238	192	499	670
6	408	322	230	127	93	325	697	441	226	185	406	595
7	385	316	220	128	94	305	576	428	218	174	395	553
8	374	315	210	124	92	290	605	403	218	167	350	517
9	363	312	192	117	89	285	552	382	222	164	310	523
10	355	302	170	110	86	280	512	365	218	157	281	483
11	344	292	158	109	84	267	539	349	210	370	259	433
12	339	289	155	110	85	287	506	337	206	1390	246	395
13	330	288	125	107	86	331	545	348	466	2570	230	365
14	328	291	168	105	89	363	768	334	281	982	305	340
15	321	280	200	102	95	331	545	327	300	1510	390	315
16	336	274	207	100	150	301	507	317	290	1920	461	300
17	365	269	196	100	350	309	498	307	281	1280	345	286
18	384	263	190	102	270	277	452	291	259	718	290	272
19	382	258	167	105	230	248	445	280	242	577	272	263
20	354	255	146	109	300	229	432	275	250	589	246	254
21	339	252	153	117	600	217	428	269	254	517	230	250
22	327	248	164	123	1340	210	449	261	230	466	218	242
23	324	246	168	130	500	205	509	264	222	406	210	234
24	445	241	140	132	360	203	477	334	268	365	199	230
25	608	231	130	131	350	201	454	735	259	365	192	250
26	609	224	130	129	450	202	427	496	310	330	355	290
27	514	222	140	124	1700	203	405	403	268	310	846	335
28	466	220	146	120	1200	204	421	357	246	315	838	268
29	433	218	152	118	---	214	424	331	246	286	950	254
30	406	212	158	116	---	234	475	307	226	277	1040	246
31	387	---	153	112	---	255	---	286	---	259	2100	---
TOTAL	12624	8384	5299	3674	9170	9246	16162	11481	7683	17694	13983	14480
MEAN	407	279	171	119	328	298	539	370	256	571	451	483
MAX	609	373	230	145	1700	700	1690	735	466	2570	2100	2180
MIN	321	212	125	100	84	201	259	261	206	157	192	230
CFSM	.80	.55	.34	.23	.64	.58	1.06	.72	.50	1.12	.88	.95
IN.	.92	.61	.39	.27	.67	.67	1.18	.84	.56	1.29	1.02	1.05
AC-FT	25040	16630	10510	7290	18190	18340	32060	22770	15240	35100	27740	28720

CAL YR 1980 TOTAL 136536 MEAN 373 MAX 4310 MIN 90 CFSM .73 IN 9.94 AC-FT 270800
WTR YR 1981 TOTAL 129880 MEAN 356 MAX 2570 MIN 84 CFSM .70 IN 9.46 AC-FT 257600

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1962 to September 1964, October 1965 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1962 to December 1967.

INSTRUMENTATION.--Temperature recorder since Apr. 12, 1967.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 33.5°C July 5-6, 1977; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,700 mg/L May 26, 1965; minimum daily mean, 1 mg/L Oct. 21, 1965.
SEDIMENT LOADS: Maximum daily, 62,300 tons (56,500 tonnes) June 10, 1967; minimum daily, 0.1 ton (0.09 tonne) Oct. 21, 1965.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 30.0°C July 8; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	14.5	13.5	6.5	5.5	3.5	1.5	.0	.0	.0	.0	2.0	1.0
2	13.5	11.5	6.5	5.5	1.5	1.5	.0	.0	.5	.0	2.0	.5
3	11.5	10.5	8.5	6.5	1.5	1.5	.0	.0	.5	.5	1.0	.5
4	11.0	10.0	8.5	7.0	1.5	1.5	.5	.0	.5	.0	3.5	1.0
5	11.0	9.0	8.0	6.0	1.5	1.5	.5	.0	.0	.0	4.0	1.5
6	12.0	10.0	8.0	5.5	1.5	1.5	.0	.0	.0	.0	4.0	1.0
7	13.5	10.5	9.0	7.0	1.5	1.5	.0	.0	.0	.0	3.5	.5
8	14.5	12.0	8.5	8.0	3.5	1.5	.0	.0	.0	.0	4.5	1.0
9	14.0	12.0	9.0	7.0	3.5	1.5	.0	.0	.0	.0	5.0	2.0
10	14.0	12.0	8.0	6.5	2.0	1.5	.0	.0	.5	.0	5.5	3.5
11	13.0	10.0	8.0	6.5	1.5	1.5	.0	.0	.5	.5	5.5	3.0
12	10.5	8.5	8.0	6.5	1.0	1.0	.0	.0	.5	.5	6.5	3.5
13	10.0	8.0	7.0	6.5	1.0	.5	.0	.0	.5	.5	5.5	4.0
14	10.0	9.0	6.5	5.0	.5	.5	.0	.0	.5	.0	5.5	3.0
15	10.0	9.5	5.5	4.5	.5	.5	.0	.0	.0	.0	7.0	4.0
16	11.0	9.5	4.5	3.5	.5	.5	.0	.0	.0	.0	6.5	4.0
17	11.0	10.0	4.0	3.5	.5	.5	.0	.0	.0	.0	6.5	4.0
18	11.0	8.5	4.0	3.0	.5	.0	.0	.0	.0	.0	5.0	3.5
19	9.0	7.0	3.5	2.0	.0	.0	.0	.0	.5	.0	4.5	2.0
20	10.0	8.5	3.5	2.0	.0	.0	.0	.0	.5	.0	6.0	2.0
21	10.0	9.0	4.0	2.0	.0	.0	.0	.0	.5	.0	7.0	3.[illegible]
22	10.0	8.5	4.0	3.0	.0	.0	.0	.0	.0	.0	9.0	4.0
23	10.0	8.0	4.5	4.0	.0	.0	.0	.0	1.0	.0	9.5	4.5
24	10.0	8.0	4.0	2.0	.0	.0	.0	.0	3.0	.5	10.0	5.5
25	8.0	6.5	2.0	1.5	.0	.0	.0	.0	3.5	1.0	8.5	6.0
26	6.5	5.5	1.5	1.0	.0	.0	.5	.0	3.0	1.5	10.0	5.5
27	6.0	5.5	2.0	1.5	.0	.0	.5	.0	2.0	1.5	9.5	5.0
28	5.5	4.5	2.0	1.5	.0	.0	.5	.0	1.5	1.0	10.0	7.0
29	5.5	4.0	3.5	2.0	.0	.0	.0	.0	---	---	11.5	9.0
30	6.0	4.5	4.0	3.0	.0	.0	.0	.0	---	---	10.0	9.0
31	6.5	5.5	---	---	.0	.0	.0	.0	---	---	10.5	7.0
MONTH	14.5	4.0	9.0	1.0	3.5	.0	.5	.0	3.5	.0	11.5	.5

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	9.5	6.5	11.5	10.0	21.0	15.5	26.0	21.0	23.0	20.5	17.0	15.0
2	11.0	6.5	13.5	9.5	20.0	18.0	25.0	21.5	20.5	18.5	15.0	13.5
3	10.5	9.5	13.0	11.0	19.5	15.5	24.5	22.0	22.0	18.5	15.0	13.5
4	10.0	5.5	12.0	11.0	21.0	16.0	27.0	21.0	24.0	21.0	15.5	14.5
5	6.5	4.5	14.5	11.0	23.0	18.0	28.5	23.0	24.0	20.5	15.5	14.0
6	7.0	4.5	14.0	11.0	24.0	18.0	29.5	23.5	23.5	19.5	15.5	13.0
7	9.0	6.0	13.5	10.0	21.0	18.5	29.5	24.0	22.0	20.0	15.0	14.0
8	9.0	8.0	13.0	11.0	20.0	18.0	30.0	25.0	22.0	18.5	15.5	13.5
9	9.0	5.5	12.0	10.0	16.5	16.0	29.5	24.0	22.0	19.0	16.5	13.5
10	10.0	8.0	11.0	8.0	20.5	14.5	29.5	23.0	21.0	18.0	18.0	15.0
11	9.5	9.0	13.0	8.5	21.5	17.0	28.0	23.0	21.5	17.0	19.0	16.0
12	11.0	8.5	11.5	9.5	24.0	18.5	25.5	22.0	23.5	18.5	18.5	16.0
13	11.0	9.5	13.0	9.5	22.0	18.5	26.5	24.5	22.0	19.0	18.0	15.0
14	9.5	7.0	15.0	10.5	23.0	21.0	26.5	25.0	21.5	19.5	18.0	15.5
15	9.0	5.5	16.5	11.0	21.5	19.5	26.0	21.0	21.5	18.5	16.5	15.0
16	9.0	7.0	16.0	13.0	20.0	17.0	23.0	20.5	20.5	17.0	15.5	13.0
17	10.0	6.5	15.0	13.5	21.0	16.0	23.5	21.5	18.5	14.5	13.5	11.0
18	10.5	8.0	14.0	10.0	22.0	18.5	24.0	21.5	19.0	14.5	13.5	10.5
19	10.5	9.0	16.0	10.0	22.0	18.0	24.0	21.5	19.5	15.0	14.5	10.5
20	10.0	6.5	18.0	11.5	22.0	18.0	24.0	21.5	20.0	15.0	15.0	11.5
21	9.0	6.5	18.5	13.0	21.0	18.5	23.0	21.0	19.5	15.5	14.0	13.0
22	8.5	8.0	18.5	15.0	20.0	16.0	21.5	20.0	19.5	15.5	15.0	11.5
23	8.5	6.0	17.0	15.5	21.5	16.5	21.0	19.5	20.0	15.5	13.0	11.0
24	8.0	5.5	16.5	13.5	21.0	18.5	22.0	18.5	21.0	17.0	13.0	11.0
25	10.5	6.5	14.0	12.0	23.5	18.0	21.0	20.0	19.0	17.0	13.5	13.5
26	13.5	9.0	15.5	13.0	23.5	19.0	20.5	18.5	19.5	17.0	16.0	13.5
27	15.5	11.5	16.0	13.5	23.5	20.0	19.0	16.5	17.0	16.0	14.5	12.0
28	15.0	11.5	16.0	14.5	25.0	20.5	19.0	15.5	16.5	16.0	13.5	10.5
29	12.0	10.5	18.5	14.5	24.5	22.0	20.0	15.5	16.5	15.5	13.5	11.5
30	12.0	10.0	19.0	15.0	26.0	20.5	21.5	18.5	18.0	16.0	14.5	13.0
31	---	---	19.5	14.5	---	---	24.5	19.0	18.0	16.0	---	---
MONTH	15.5	4.5	19.5	8.0	26.0	14.5	30.0	15.5	24.0	14.5	19.0	10.5
YEAR	30.0	.0										

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'16", long 91°30'31", in SW1/4 NW1/4 sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft (198 m) upstream from Mineral Creek, 0.5 mi (0.8 km) upstream from Bear Creek, 3.5 mi (5.6 km) south of Dorchester, and 18.1 mi (29.1 km) upstream from mouth.

DRAINAGE AREA.--770 mi² (1,994 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1936 to June 1975 (gage heights and discharge measurements only), July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft (201.168 m) NGVD. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi (0.3 km) upstream at datum 5.91 ft (1.801 m) higher. Jan. 6, 1938, to Apr. 26, 1948, nonrecording gage at datum 60.00 ft (18.288 m) lower, Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Records good except those for winter period, which are poor. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--6 years, 453 ft³/s (12.83 m³/s), 7.99 in/yr (203 mm/yr), 328,200 acre-ft/yr (405 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (396 m³/s) Mar. 12, 1976, gage height, 17.67 ft (5.386 m); minimum daily, 79 ft³/s (2.24 m³/s) Dec. 31, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft (6.64 m), from flood profile, discharge, 30,400 ft³/s (861 m³/s) on basis of slope-area determination of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 4	1015	4,090	116	11.88	3.621	Aug. 31	1900	*4,120	117	*11.91	3.630

Minimum daily discharge, 126 ft³/s (3.57 m³/s) Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	725	495	267	225	178	1280	310	799	479	440	400	2520
2	671	480	250	215	178	773	318	805	460	450	671	1640
3	623	470	160	200	173	613	338	769	450	440	611	1530
4	583	455	205	190	160	507	2470	742	425	420	659	1490
5	545	435	280	178	152	441	1640	749	410	415	629	1350
6	525	425	300	180	148	387	1310	733	392	408	872	1170
7	505	415	305	186	147	347	1080	726	372	395	588	1010
8	485	400	290	184	147	325	1060	701	360	390	594	900
9	460	400	270	178	145	312	1210	673	372	388	510	858
10	445	388	240	174	138	305	979	645	388	380	460	781
11	425	376	220	170	132	333	1020	615	356	550	425	725
12	410	364	210	168	126	355	977	590	364	886	400	781
13	400	364	200	166	128	379	938	583	600	2230	380	760
14	400	364	215	160	132	437	1370	583	561	1540	410	578
15	396	360	245	153	140	466	1110	574	525	1750	653	535
16	400	352	280	152	215	409	982	557	540	1610	572	506
17	430	344	285	154	420	388	971	534	530	1740	566	486
18	425	340	278	156	840	381	885	516	485	1120	480	469
19	450	328	232	154	640	346	828	503	420	893	430	456
20	445	328	218	157	568	313	815	490	435	816	400	441
21	415	324	220	166	508	287	760	476	450	802	380	426
22	396	316	230	176	2360	272	764	469	425	695	360	412
23	392	312	235	190	1400	260	918	433	408	617	344	397
24	440	308	215	200	739	254	874	636	454	566	336	389
25	617	297	203	204	748	247	833	732	508	535	324	402
26	788	289	205	203	820	249	794	982	520	577	364	458
27	701	280	210	201	624	246	746	722	500	490	695	591
28	617	280	225	196	2190	242	735	631	470	495	1160	491
29	566	277	233	187	---	251	742	584	470	475	1270	447
30	535	270	238	178	---	273	796	544	445	445	1020	424
31	515	---	240	175	---	289	---	507	---	420	2100	---
TOTAL	15730	10836	7404	5576	14296	11967	28573	19603	13574	23378	19063	23423
MEAN	507	361	239	180	511	386	952	632	452	754	615	781
MAX	788	495	305	225	2360	1280	2470	982	600	2230	2100	2520
MIN	392	270	160	152	126	242	310	433	356	380	324	389
CFSM	.66	.47	.31	.23	.66	.50	1.24	.82	.59	.98	.80	1.01
IN.	.76	.52	.36	.27	.69	.58	1.38	.95	.66	1.13	.92	1.13
AC-FT	31200	21490	14690	11060	28360	23740	56670	38880	26920	46370	37810	46460

CAL YR 1980 TOTAL 180764 MEAN 494 MAX 4950 MIN 80 CFSM .64 IN 8.73 AC-FT 358500
WTR YR 1981 TOTAL 193423 MEAN 530 MAX 2520 MIN 126 CFSM .69 IN 9.34 AC-FT 383700

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to September 1981 (discontinued).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1975 to September 1981 (discontinued).
WATER TEMPERATURES: October 1977 to September 1981 (discontinued).
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to September 1981 (discontinued).

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 635 micromhos Aug. 5, 1975; minimum daily, 205 micromhos July 21, 1977.
WATER TEMPERATURES: Maximum daily, 30.0°C July 8, 1981; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 10,000 mg/L July 17, 1978; minimum daily mean, 0 mg/L Jan. 28,29, 1979.
SEDIMENT LOADS: Maximum daily, 173,000 tons (157,000 tonnes) June 17, 1978; minimum daily, 0 tons (0 tonnes) Jan. 28, 29, 1979.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 520 micromhos Apr. 8; minimum daily, 290 micromhos July 14.
WATER TEMPERATURES: Maximum daily, 30.0°C July 8; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,870 mg/L Apr. 4; minimum daily mean, 2 mg/L Nov. 1, Dec. 26.
SEDIMENT LOADS: Maximum daily, 70,100 tons (63,600 tonnes) Apr. 4; minimum daily, 1.1 tons (1.0 tonnes) Dec. 26.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	450	360	440	360	370	500	420	360	470	400	---	---
2	450	360	450	380	370	500	450	380	480	---	---	---
3	430	360	440	380	380	440	460	---	480	---	---	---
4	460	380	430	360	370	500	380	390	410	---	---	---
5	450	360	450	380	360	500	---	380	---	---	---	---
6	480	360	460	380	440	460	470	370	---	---	460	---
7	440	350	450	380	380	420	500	---	370	---	---	---
8	400	350	440	400	380	460	520	380	---	410	440	380
9	410	350	430	380	360	470	510	370	---	380	---	390
10	420	360	450	400	370	510	490	370	360	420	---	---
11	400	360	430	400	380	480	---	---	---	440	---	---
12	430	350	430	410	---	460	440	---	---	450	---	---
13	390	350	440	410	---	460	420	---	460	300	---	400
14	420	350	480	430	390	460	520	350	390	290	---	380
15	400	355	430	400	500	460	500	---	---	---	---	440
16	410	355	380	400	360	460	420	360	480	---	460	---
17	390	355	370	400	360	460	440	---	---	350	470	---
18	360	355	370	380	360	460	410	360	---	---	---	---
19	360	355	370	360	350	470	400	---	410	440	480	---
20	360	355	380	420	360	460	390	380	---	---	410	---
21	360	355	380	380	370	470	380	370	---	500	390	---
22	360	365	370	460	380	470	370	---	390	---	380	---
23	360	365	380	380	410	420	---	---	---	440	400	---
24	360	365	390	400	---	400	420	---	---	420	---	---
25	360	365	380	370	410	400	---	480	---	---	---	---
26	360	355	380	380	440	420	330	400	410	460	390	---
27	360	350	380	380	440	420	---	440	---	---	---	---
28	---	350	390	370	460	410	370	---	410	420	---	---
29	---	400	360	380	---	410	380	---	---	400	---	---
30	360	440	370	380	---	410	380	---	390	---	380	---
31	360	---	380	380	---	420	---	460	---	440	---	---

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	4.0	1.0	.0	.0	2.0	10.0	---	24.0	27.0	---	---
2	16.0	4.0	1.0	.0	.0	2.0	10.0	---	22.0	---	---	---
3	16.0	3.0	1.0	.0	.0	2.0	10.0	---	20.0	---	---	---
4	16.0	5.5	1.0	.0	.0	3.0	8.5	---	18.0	---	---	---
5	16.0	5.0	.0	.0	.0	3.0	---	---	---	---	---	---
6	17.0	4.0	.0	.0	.0	2.0	8.0	---	---	---	25.0	---
7	17.0	4.0	.0	.0	.0	2.0	10.0	---	24.0	---	---	---
8	16.0	5.0	.0	.0	.0	3.0	9.0	13.0	---	29.0	25.0	19.0
9	16.0	5.0	.0	.0	.0	4.0	10.0	14.5	18.0	30.0	---	20.0
10	16.0	5.0	.0	.0	---	4.0	14.0	14.0	23.0	28.0	---	---
11	---	4.0	.0	.0	.0	4.0	---	---	---	24.0	---	---
12	16.0	4.0	.0	.0	---	4.0	---	---	---	25.0	---	---
13	14.0	4.0	.0	.0	---	4.0	---	---	25.0	27.0	---	18.0
14	14.0	3.0	.0	.0	---	4.0	---	15.0	24.0	26.0	---	19.0
15	14.0	3.0	.0	.0	.0	4.0	---	---	---	---	---	19.0
16	14.0	3.0	.0	.0	.0	4.0	---	15.0	19.0	---	20.0	---
17	14.0	4.0	.0	.0	.0	4.0	---	---	---	26.0	22.0	---
18	7.0	4.0	.0	.0	.0	5.0	---	17.0	---	---	---	---
19	7.0	4.0	.0	.0	.0	5.0	---	---	23.0	24.0	20.0	---
20	6.0	4.0	.0	.0	1.0	5.0	---	21.0	---	---	19.0	---
21	6.0	3.0	.0	.0	1.0	5.0	---	21.5	---	22.0	23.0	---
22	4.0	2.0	.0	.0	2.0	6.0	---	---	21.0	22.0	24.0	---
23	4.0	2.0	.0	.0	3.0	6.0	---	---	---	---	24.0	---
24	5.0	2.0	.0	.0	---	7.0	---	---	---	24.0	---	---
25	4.0	1.0	.0	.0	3.0	7.0	---	16.0	---	---	---	---
26	5.0	1.5	.0	.0	3.0	7.0	---	18.0	20.0	22.0	21.0	---
27	4.0	1.0	.0	.0	3.0	9.0	---	20.0	---	---	---	---
28	---	1.0	.0	.0	3.0	9.0	---	---	24.0	20.0	---	---
29	---	.0	.0	.0	---	10.0	---	---	---	22.0	---	---
30	4.0	.0	.0	.0	---	10.0	---	---	25.0	---	20.0	---
31	3.0	---	.0	.0	---	10.0	---	22.0	---	26.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	101	138	2	2.7	47	34	8	4.9	96	47	83	287
2	92	167	3	3.9	21	14	18	10	125	60	80	104
3	61	103	5	6.3	32	14	12	6.5	144	67	25	41
4	97	183	14	17	31	17	17	8.7	69	30	34	47
5	73	107	8	9.4	24	18	30	14	146	60	19	23
6	104	147	5	5.7	24	19	8	3.9	68	27	17	18
7	92	125	8	9.0	20	16	17	8.5	26	10	25	23
8	25	33	7	7.6	35	27	33	16	28	11	37	32
9	19	24	12	13	27	20	32	15	39	15	35	29
10	25	30	11	12	41	27	37	17	30	11	27	22
11	12	14	11	11	43	26	43	20	28	10	19	17
12	12	13	8	7.9	48	27	54	24	29	9.9	18	17
13	28	30	11	11	66	36	48	22	32	11	10	10
14	29	31	12	12	40	23	50	22	26	9.3	34	40
15	37	40	14	14	28	19	48	20	7	2.6	29	36
16	31	33	15	14	13	9.8	44	18	37	21	16	18
17	24	28	16	15	6	4.6	63	26	31	35	23	24
18	14	16	12	11	4	3.0	160	71	17	39	7	7.2
19	15	18	14	12	5	3.1	182	63	18	31	3	2.8
20	12	14	10	8.9	7	4.1	84	36	44	67	7	5.9
21	6	6.7	16	14	8	4.8	102	46	205	201	3	2.3
22	3	3.2	18	14	11	6.8	35	17	945	6020	8	5.9
23	13	14	19	16	10	6.3	78	40	310	1170	29	20
24	3	3.6	13	11	8	4.6	67	36	210	419	32	22
25	8	13	9	7.2	12	6.6	67	37	270	661	25	17
26	5	11	27	21	2	1.1	78	41	265	507	22	15
27	9	17	14	11	5	2.8	80	43	164	276	26	17
28	13	22	28	21	15	9.1	112	59	185	1090	23	15
29	13	20	19	14	10	6.3	129	65	---	---	17	12
30	6	8.7	19	14	17	11	142	68	---	---	23	17
31	3	4.2	---	---	23	15	144	68	---	---	24	19
TOTAL	---	1447.4	---	346.6	---	436.0	---	946.5	---	10977.00	---	966.1

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	45	38	50	108	100	129	155	184	88	93	1200	8160
2	118	100	47	102	97	120	159	193	248	449	480	2130
3	6380	5820	57	118	106	129	151	179	281	464	284	1170
4	9870	70100	50	100	105	120	142	161	229	407	253	1020
5	3600	15900	43	87	94	104	131	147	170	289	221	806
6	1120	3960	38	75	83	88	122	134	350	824	183	578
7	470	1370	79	155	73	73	114	122	213	338	142	387
8	348	996	75	142	70	68	107	113	187	300	111	270
9	350	1140	37	67	88	88	95	100	156	215	113	262
10	227	600	21	37	97	102	100	103	136	169	116	245
11	340	936	17	28	95	91	122	181	123	141	110	215
12	350	923	17	27	86	85	694	1990	108	117	98	207
13	220	557	18	28	646	1300	2200	13700	96	98	84	172
14	981	3800	23	36	820	1240	1020	4620	105	116	82	128
15	900	2700	42	65	627	889	1920	9070	181	319	77	111
16	362	980	48	69	455	663	1750	7610	160	247	75	102
17	157	412	32	46	350	501	1180	5540	142	217	72	94
18	158	378	19	26	292	382	600	1810	97	126	70	89
19	172	385	16	22	238	270	363	875	75	87	68	84
20	158	348	22	29	200	235	314	692	94	102	64	76
21	128	288	30	39	181	220	416	901	54	55	58	67
22	112	231	31	39	173	199	317	595	33	32	53	59
23	152	377	29	34	258	284	220	366	29	27	48	51
24	130	307	257	441	316	387	188	287	34	31	40	42
25	107	241	429	970	276	379	191	276	59	52	38	41
26	100	214	738	1960	250	351	306	477	79	78	89	110
27	93	187	448	873	232	313	220	291	325	610	125	199
28	85	169	320	545	218	277	158	211	473	1480	107	142
29	63	126	232	366	188	239	110	141	480	1650	83	100
30	63	135	158	232	153	184	91	109	428	1180	64	73
31	---	---	109	149	---	---	88	100	1500	8500	---	---
TOTAL	---	113666	---	7015	---	9510	---	81278	---	18813	---	17190

TOTAL LOAD FOR YEAR: 232592.4 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
NOV							
03...	1030	7.0	450	39	47	--	--
MAR							
10...	1100	--	313	21	18	--	--
APR							
04...	1230	8.0	3840	12200	126000	33	39
10...	1130	14.0	978	218	576	--	--
JUN							
03...	1000	20.0	457	110	136	--	--
JUL							
14...	1530	26.0	1410	645	2460	53	54
AUG							
26...	0945	20.0	348	85	81	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV							
03...	--	--	--	--	--	--	25
MAR							
10...	--	--	--	--	--	--	67
APR							
04...	45	61	93	94	98	100	--
10...	--	--	--	--	--	--	90
JUN							
03...	--	--	--	--	--	--	93
JUL							
14...	60	75	98	99	100	--	--
AUG							
26...	--	--	--	--	--	--	78

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM
NOV 03...	1030	450	7	1	1	6	38
MAR 10...	1100	313	3	--	0	3	27
APR 10...	1200	978	8	--	0	4	37
JUN 03...	1000	457	7	1	1	7	67
JUL 14...	1530	1410	8	--	0	5	78
AUG 26...	0945	348	6	--	0	6	45

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
NOV 03...	64	73	78	84	94	100
MAR 10...	57	68	72	75	83	89
APR 10...	79	90	94	96	99	100
JUN 03...	94	96	97	100	--	--
JUL 14...	97	99	99	100	--	--
AUG 26...	71	80	85	91	95	100

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE1/4 SE1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi (4.2 km) upstream from Wisconsin River, 4.3 mi (6.9 km) downstream from Yellow River, and at mile 633.4 (1,019.1 km) upstream from Ohio River.

DRAINAGE AREA.--67,500 mi² (174,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft (184.355 m) NGVD. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi (22.7 km) upstream in tailwater of dam 9, at datum 5.30 ft (1.615 m) lower.

REMARKS.--Records good except those for winter period, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and Lock and Dam No. 10. Minor flow regulation caused by navigation dams.

COOPERATION.--Auxiliary gage-height and discharge data at Lock and Dam No. 9 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--45 years, 33,780 ft³/s (956.1 m³/s), 6.79 in/yr (172 mm/yr), 24,460,000 acre-ft/yr (30,160 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 276,000 ft³/s (7,820 m³/s) Apr. 24, 1965; maximum gage height, 25.38 ft (7.736 m) Apr. 24, 1965; minimum daily discharge, 6,200 ft³/s (176 m³/s) Dec. 9, 1936; minimum gage height, -0.86 ft (-0.262 m) Aug. 18, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 80,700 ft³/s (2,280 m³/s) May 12; maximum gage height, 12.58 ft (3.834 m) May 11,12; minimum daily discharge, 10,000 ft³/s (283 m³/s) Dec. 14; minimum gage height, 6.26 ft (1.908 m) Dec. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66600	39700	16200	17500	15500	46900	35900	49600	33400	59000	32500	40700
2	57100	38600	17900	17800	14800	46500	42400	50400	31800	59500	33300	45000
3	47400	35200	20900	18000	13800	44800	48700	50400	26600	59600	36100	48200
4	40600	30500	22400	17800	13500	40300	58600	51400	22700	60500	36300	52800
5	36500	27500	21600	17000	14000	35000	59100	52200	22400	60400	35600	52900
6	33500	25800	20800	16800	14000	30600	58000	52300	22200	59600	36500	45700
7	29700	26600	19700	17000	14000	26700	59900	54500	22900	56600	37200	39300
8	25400	26500	19500	17200	14000	22200	65100	60200	22400	52600	37600	38200
9	25000	25300	19000	17200	14000	18500	69000	70400	23900	47600	37700	38500
10	25200	26800	18500	17000	14000	17400	74300	76200	25300	40800	37300	36500
11	25700	27400	18400	17000	13800	19000	73000	79900	24600	41800	36500	34400
12	26400	27500	17800	16800	13600	29100	69300	80700	24000	46200	34400	32500
13	25200	26600	13500	16400	13400	30800	65500	78000	25900	51400	33200	31300
14	21800	25400	10000	16000	13200	32000	56600	73300	29100	53700	32500	28900
15	20700	24000	11000	15600	13100	30900	60900	64000	31100	53600	33300	23800
16	19700	22800	14000	15400	13300	26900	45400	57000	34400	50800	36000	18700
17	20600	22000	19200	15200	15000	22000	42700	47600	34600	47000	36900	15300
18	25500	21800	23300	15100	20000	18500	40800	40500	35100	43200	37800	15200
19	30300	21800	23800	15000	25000	16200	39800	35300	37300	39600	36400	19200
20	32000	26200	21000	15200	28100	19900	38300	32800	44100	39400	30900	16500
21	30300	27200	22600	15400	28800	24500	35900	31600	51000	40600	25800	24000
22	25900	28200	22300	15600	30500	24300	35100	30500	55300	40400	25500	25000
23	22800	28600	18600	16000	38300	22800	35100	30100	60600	38800	24900	24100
24	27300	29200	16000	16200	41300	21700	35800	31800	62100	37000	24700	20900
25	32400	26800	13500	16600	41600	21500	36800	32600	62600	35000	24800	16300
26	35000	23300	12000	16800	43700	19200	37500	28900	61200	33000	22600	17200
27	35000	22200	13000	17000	44900	16100	39200	23400	60800	32700	21800	23100
28	35000	19900	14000	17000	45800	18900	41500	20700	60000	33100	22800	22700
29	35700	17800	15000	17000	---	21900	43900	22100	60100	33200	27100	22400
30	37100	16900	16000	16600	---	28300	46600	28200	59200	33600	31000	21100
31	39000	---	17000	16000	---	32200	---	33200	---	33400	36900	---
TOTAL	990400	788100	548500	511200	625000	825600	1480700	1469800	1167800	1412700	996900	890400
MEAN	31950	26270	17690	16490	22320	26630	49360	47410	38920	45570	32160	29680
MAX	66600	39700	23800	18000	45800	46900	74300	80700	62600	60500	37800	52900
MIN	19700	16900	10000	15000	13100	16100	35100	20700	22200	32700	21800	15200
CFSM	.47	.39	.26	.24	.33	.40	.73	.70	.58	.68	.48	.44
IN.	.55	.43	.30	.28	.34	.45	.82	.81	.64	.78	.55	.49
AC-FT	1964000	1563000	1088000	1014000	1240000	1638000	2937000	2915000	2316000	2802000	1977000	1766000

CAL YR 1980 TOTAL 12232000 MEAN 33420 MAX 87400 MIN 10000 CFSM .50 IN 6.74 AC-FT 24260000
WTR YR 1981 TOTAL 11706800 MEAN 32070 MAX 80700 MIN 10000 CFSM .48 IN 6.45 AC-FT 23220000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	24,100	23,200	18,800	16,900	17,200	34,000	72,900	57,400	48,900	39,300	24,700	25,400	33,600
RUNOFF (INCHES)	0.41	0.38	0.32	0.29	0.27	0.58	1.20	0.98	0.81	0.67	0.42	0.42	6.76
STD. DEVIATION	0.21	0.16	0.10	0.08	0.10	0.24	0.57	0.42	0.36	0.33	0.21	0.19	1.65
PERCENT OF ANNUAL	6.1	5.6	4.7	4.3	4.0	8.6	18	14	12	9.9	6.2	6.2	----
PRECIP. (INCHES)	1.9	1.6	1.2	1.0	0.9	2.2	2.8	3.5	4.6	4.0	3.2	3.2	30.0

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER QUALITY RECORDS

LOCATION.--Samples collected by boat 1.5 mi (2.4 km) downstream from discharge station. Prior to April 1981, at bridge on U.S. Highway 18, 1.2 mi (1.9 km) upstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1975 to current year
WATER TEMPERATURES: July 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 707 mg/L Mar. 31, 1979; minimum daily mean, 1 mg/L Dec. 23-25, 1976, Dec. 20, 28, 1977.
SEDIMENT LOADS: Maximum daily, 166,000 tons (151,000 tonnes) Mar. 31, 1979; minimum daily, 31 tons (28 tonnes) Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 251 mg/L Oct. 20; minimum daily mean, 5 mg/L Dec. 10, 22, 23, Jan. 30, 31.
SEDIMENT LOADS: Maximum daily, 30,100 tons (27,300 tonnes) Apr. 6; minimum daily, 153 tons (139 tonnes) Dec. 15.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	360	---	---	---	---	---	400
2	---	---	---	---	400	---	345	---	295	305	---	---
3	220	245	---	---	---	---	---	---	---	---	---	---
4	---	---	---	410	---	320	---	300	---	---	370	380
5	---	240	410	---	---	---	---	---	---	290	---	---
6	280	---	---	---	400	---	---	---	---	---	380	---
7	---	270	---	---	---	350	---	310	---	---	---	---
8	---	---	---	410	---	---	---	---	---	---	---	---
9	---	300	---	---	---	---	300	---	290	300	360	410
10	295	---	410	---	---	---	290	---	---	---	---	---
11	---	---	---	---	390	---	---	---	310	---	---	410
12	---	---	---	400	---	365	---	240	---	---	---	---
13	305	300	---	---	---	---	---	---	---	330	350	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	250	---	300	350	410
16	---	---	420	---	400	370	---	---	310	---	---	---
17	290	320	---	380	---	---	---	---	---	---	---	420
18	---	---	---	---	---	---	300	---	310	---	370	---
19	300	320	---	---	---	380	---	280	---	---	---	---
20	---	---	---	---	360	---	---	---	---	320	---	---
21	---	---	415	---	---	---	---	275	---	---	---	---
22	---	---	---	---	---	---	300	---	---	---	360	---
23	305	320	---	390	340	365	---	---	290	320	---	410
24	295	---	---	---	---	---	310	---	---	---	370	---
25	---	---	---	---	---	---	---	280	310	---	---	410
26	---	320	420	---	340	340	---	---	---	---	380	---
27	---	---	---	---	---	---	320	---	---	---	---	---
28	---	---	---	---	---	---	---	280	---	340	---	---
29	---	---	---	400	---	---	---	---	310	---	---	---
30	---	315	---	---	---	335	300	---	---	---	---	420
31	295	---	---	---	---	---	---	280	---	360	---	---

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---		---	---	---	---	---	23.0
2	---	---	---	---	.0		10.0	---	22.0	24.0	---	---
3	12.0	8.0	---	---	---		---	---	---	---	---	---
4	---	---	---	.0	---		---	16.0	---	---	24.0	23.0
5	---	6.5	.0	---	---		---	---	---	28.0	---	---
6	11.0	---	---	---	.0		---	---	---	---	24.0	---
7	---	7.0	---	---	---		---	17.0	---	---	---	---
8	---	---	---	.0	---		---	---	---	---	---	---
9	---	7.0	---	---	---		10.0	---	24.0	28.0	24.0	23.0
10	15.0	---	.0	---	---		10.0	---	---	---	---	---
11	---	---	---	---	.0		---	---	24.0	---	---	24.0
12	---	---	---	.0	---		---	14.0	---	---	---	---
13	10.0	6.0	---	---	---		---	---	---	27.0	---	---
14	---	---	---	---	---		---	---	---	---	---	---
15	---	---	---	---	---		---	13.0	---	26.0	24.0	22.0
16	---	---	.0	---	.0		---	---	27.0	---	---	---
17	12.0	4.0	---	---	---		---	---	---	---	---	20.0
18	---	---	---	.0	---		12.0	---	24.0	---	23.5	---
19	10.0	4.0	---	---	---		---	17.0	---	---	---	---
20	---	---	---	---	.0		---	---	---	26.0	---	---
21	---	---	.0	---	---		---	20.0	---	---	---	---
22	---	---	---	---	---		11.0	---	---	---	24.0	---
23	10.0	4.0	---	.0	.0		---	---	24.0	25.0	---	18.0
24	[illegible]	---	---	---	---		9.0	---	---	---	24.0	---
25	---	---	---	---	---		---	18.0	24.0	---	---	22.0
26	---	4.0	.0	---	.0		---	---	---	---	24.0	---
27	---	---	---	---	---		15.0	---	---	---	---	---
28	---	---	---	---	---		---	22.0	---	25.0	---	---
29	---	---	---	.0	---		---	---	25.0	---	---	---
30	---	2.0	---	---	---		14.0	---	---	---	---	18.0
31	5.5	---	.0	---	---		---	22.0	---	24.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	91	16400	89	9540	45	1750	7	289	7	266	50	6330
2	113	17400	74	7710	38	1610	7	289	9	340	43	5400
3	127	16300	62	5890	30	1470	8	339	10	373	28	3390
4	107	11700	58	4780	20	1010	9	391	8	279	21	2290
5	76	7490	54	4010	9	464	9	389	7	229	19	1800
6	72	6510	50	3480	8	428	9	403	10	305	16	1320
7	72	5770	42	3020	8	400	10	445	11	303	14	1010
8	71	4870	39	2790	7	352	9	399	13	355	13	779
9	73	4930	37	2530	6	298	14	612	14	386	13	649
10	90	6120	37	2680	5	250	16	691	13	352	12	564
11	93	6450	40	2960	9	447	14	571	12	373	12	616
12	120	8550	41	3040	22	1060	10	378	12	379	13	1020
13	147	10000	40	2870	14	510	9	357	12	386	17	1410
14	126	7420	41	2810	11	279	9	306	11	386	21	1810
15	87	4860	42	2720	8	153	7	248	10	354	21	1750
16	55	2930	56	3450	7	265	6	214	12	431	20	1450
17	44	2450	71	4220	7	363	7	249	25	1010	21	1250
18	93	6400	60	3530	7	440	8	285	41	2210	22	1100
19	204	16700	42	2470	7	450	8	287	72	4860	21	919
20	261	22600	45	3180	7	397	8	287	105	7970	19	1020
21	225	18400	68	4990	6	366	9	326	100	7780	17	1120
22	161	11300	80	6090	5	301	9	345	73	6010	23	1510
23	123	7570	79	6100	5	251	11	431	48	4960	28	1720
24	209	15400	78	6150	8	318	10	391	41	4570	34	1990
25	248	21700	75	5430	8	240	10	394	36	4040	34	1970
26	231	21800	72	4530	9	253	9	352	33	3890	30	1560
27	207	19600	69	4140	9	211	8	313	40	4850	29	1260
28	180	17000	64	3440	9	248	8	313	47	5810	27	1380
29	152	14700	57	2740	8	270	6	232	---	---	60	3550
30	126	12600	51	2190	7	263	5	193	---	---	100	7640
31	104	11000	---	---	7	283	5	192	---	---	120	10400
TOTAL	---	356920	---	123480	---	15400	---	10911	---	63467	---	69977

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA-Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	97	9400	38	5090	66	5950	89	14200	27	2370	206	22600
2	58	6840	46	6260	38	3260	87	14000	92	8270	178	21600
3	66	8680	51	6940	28	2010	81	13000	118	11500	96	12500
4	114	18000	55	7630	26	1590	73	11900	86	8430	55	7840
5	174	27800	63	8880	27	1630	64	10400	64	6150	50	7140
6	192	30100	60	8470	28	1680	64	10300	48	4730	46	5680
7	174	28100	47	6920	29	1790	64	9780	45	4520	42	4460
8	132	23200	45	7310	31	1870	62	8810	43	4370	38	3920
9	81	15100	43	8170	33	2130	61	7840	42	4280	35	3640
10	67	13400	42	8640	33	2250	60	6610	40	4030	45	4430
11	65	12800	38	8200	42	2790	61	6880	38	3740	40	3720
12	64	12000	34	7410	48	3110	62	7570	35	3250	37	3280
13	62	11000	33	6950	66	4620	64	8880	33	2960	50	4230
14	60	9170	33	6530	62	4870	72	10400	31	2720	51	3980
15	60	8250	38	6570	68	5710	78	11300	32	2880	46	2960
16	59	7230	74	11400	82	7620	76	10400	56	5440	39	1970
17	58	6690	85	10900	84	7850	72	9140	65	6480	36	1490
18	57	6280	64	7000	80	7580	66	7700	45	4590	33	1350
19	53	5700	44	4190	84	8460	61	6520	39	3830	47	2440
20	48	4960	41	3630	85	10100	56	5960	37	3090	62	3650
21	45	4360	37	3160	87	12000	60	6580	34	2460	98	6350
22	41	3890	38	3130	88	13100	62	6760	33	2270	73	4930
23	41	3890	39	3170	90	14700	55	5760	38	2550	44	2860
24	44	4250	39	3350	94	15800	49	4900	30	2000	31	1750
25	49	4870	43	3780	96	16200	44	4160	28	1870	34	1500
26	54	5470	44	3430	92	15200	39	3470	37	2260	54	2510
27	42	4450	32	2020	87	14300	34	3000	34	2000	80	4990
28	32	3590	28	1560	86	14100	38	3400	48	2950	102	6250
29	35	4150	34	2030	86	14000	39	3500	88	6440	96	5810
30	34	4280	41	3120	86	13700	32	2900	131	11000	74	4220
31	---	---	64	5740	---	---	29	2620	176	17500	---	---
TOTAL	---	307700	---	181580	---	229970	---	238640	---	150930	---	164020

TOTAL LOAD FOR YEAR: 1912995 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	NUMBER OF SAMPLING POINTS (00063)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
NOV											
05...	1200	6	27200	34	42	63	95	98	99	99	100

05411600 TURKEY RIVER AT SPILLVILLE, IA

LOCATION.--Lat 43°12'28", long 91°56'56", in SW1/4 NE1/4 sec.19, T.97 N., R.9 W., Winneshiek County, on right bank 60 ft (18 m) downstream from bridge on county highway W14 at north edge of Spillville, 150 ft (46 m) downstream from old mill dam, 0.6 mi (1.0 km) upstream from Vonder Creek and at mile 98.5 (158.5 km).

DRAINAGE AREA.--177 mi² (458 km²).

PERIOD OF RECORD.--June 1956 to September 1973, October 1977 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 1,034.92 ft (315.44 m) NGVD, revised.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 113 ft³/s (3.200 m³/s), 8.67 in/yr (220 mm/yr), 81,870 acre-ft/yr (101 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,600 ft³/s (244 m³/s) July 12, 1972, gage height, 16.73 ft (5.099 m); minimum daily, 4.4 ft³/s (0.12 m³/s) Feb. 1-3, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Flood in June 1947 reached a stage of 18.4 ft (5.61 m), from floodmark, discharge, about 10,000 ft³/s (283 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 4	2045	1,290	36.5	8.33	2.539	Aug. 30	0830	1,260	35.7	8.31	2.533
Aug. 29	0945	1,250	35.4	8.30	2.530	Aug. 31	1315	*2,690	76.2	*10.73	3.270

Minimum daily discharge, 29 ft³/s (0.82 m³/s) Feb. 10,11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	110	67	49	34	184	90	266	91	78	80	1990
2	130	106	60	45	34	161	66	208	89	72	851	868
3	123	103	45	43	33	146	76	187	89	73	253	512
4	117	101	68	43	32	118	864	181	84	95	184	382
5	113	98	75	42	33	90	693	203	79	82	180	319
6	108	96	77	42	33	81	311	209	75	68	224	275
7	103	95	72	41	32	74	235	171	71	61	164	248
8	98	93	70	40	31	71	249	156	72	56	140	222
9	95	91	68	39	30	66	270	147	74	55	123	198
10	91	88	66	38	29	64	220	137	71	52	110	180
11	89	86	59	37	29	72	260	128	67	195	102	165
12	87	85	50	37	30	84	235	122	64	411	95	153
13	85	86	70	37	33	91	200	125	230	201	89	145
14	84	87	65	36	38	91	233	128	203	137	119	137
15	83	85	51	36	60	74	188	123	165	338	135	129
16	86	84	59	35	130	71	170	111	203	337	117	123
17	93	83	58	35	263	70	168	109	160	193	102	118
18	98	82	57	35	205	66	155	105	132	149	93	114
19	94	81	53	35	155	64	148	100	113	133	86	110
20	90	80	49	36	126	61	144	98	105	122	79	105
21	88	80	48	36	160	58	137	96	97	125	78	100
22	85	78	49	37	396	56	141	90	93	107	76	93
23	83	78	50	38	337	54	178	96	87	97	75	91
24	135	77	47	39	244	53	159	128	113	90	73	90
25	245	74	45	40	194	53	148	187	134	94	72	97
26	189	71	44	40	143	54	146	150	116	83	304	109
27	155	70	45	40	148	53	132	135	101	78	509	127
28	139	72	47	39	308	52	151	125	90	97	434	131
29	128	70	49	37	---	56	226	133	90	110	1030	120
30	121	69	51	35	---	69	241	108	84	94	1030	113
31	115	---	51	35	---	82	---	96	---	80	1630	---
TOTAL	3491	2559	1775	1197	3320	2439	6634	4358	3242	3963	8637	7564
MEAN	113	85.3	57.3	38.6	119	78.7	221	141	108	128	279	252
MAX	245	110	77	49	396	184	864	266	230	411	1630	1990
MIN	83	69	44	35	29	52	66	90	64	52	72	90
CFSM	.64	.48	.32	.22	.67	.45	1.25	.80	.61	.72	1.58	1.42
IN.	.73	.54	.37	.25	.70	.51	1.39	.92	.68	.83	1.82	1.59
AC-FT	6920	5080	3520	2370	6590	4840	13160	8640	6430	7860	17130	15000

CAL YR 1980 TOTAL 40387 MEAN 110 MAX 2020 MIN 29 CFSM .62 IN 8.49 AC-FT 80110
WTR YR 1981 TOTAL 49179 MEAN 135 MAX 1990 MIN 29 CFSM .76 IN 10.34 AC-FT 97550

05412500 TURKEY RIVER AT GARBER, IA

LOCATION.--Lat 42°44'24", long 91°15'42", in SE1/4 NW1/4 sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on left bank 10 ft (3 m) downstream from bridge on county highway C43, 800 ft (244 m) upstream from Wayman Creek, 1,000 ft (305 m) southeast of Garber, 2,000 ft (610 m) downstream from Elk Creek, 1 mi (1.6 km) downstream from Volga River, and 19.8 mi (31.9 km) upstream from mouth.

DRAINAGE AREA.--1,545 mi^2 (4,002 km^2).

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (M), 1927 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 634.46 ft (193.383 m) NGVD. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Nine discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--61 years (1913-16, 1919-27, 1929-30, 1932-81), 917 ft^3/s (26.00 m^3/s), 8.06 in/yr (205 mm/yr), 664,400 acre-ft/yr (819 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft^3/s (915 m^3/s) Feb. 23, 1922, gage height, 28.06 ft (8.553 m), from floodmark; minimum daily, 49 ft^3/s (1.39 m^3/s) Jan. 28, 29, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of Feb. 23, 1922.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft^3/s (227 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Aug. 2	2100	*20,500	581	*23.29	7.099	Sept. 1	1115	14,400	408	20.28	6.181

Minimum daily discharge, 190 ft^3/s (5.38 m^3/s) Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1270	890	507	295	224	2560	525	2270	820	1110	520	13800
2	1190	854	502	280	206	1730	610	2080	772	1020	11400	10800
3	1110	817	376	240	190	1420	585	1890	778	928	13700	5830
4	1030	793	468	217	198	1270	1140	1780	662	862	5210	3800
5	964	760	529	227	204	1120	3450	1720	618	820	3440	3130
6	917	724	556	237	207	946	3120	1640	575	766	5040	2720
7	875	715	550	242	207	820	2120	1620	534	694	4840	2480
8	843	704	552	245	206	736	1850	1510	509	622	4480	2410
9	805	690	548	242	210	682	1900	1410	512	575	2820	2170
10	766	656	525	228	210	658	1930	1320	557	530	1990	1960
11	725	627	430	225	195	629	1730	1240	540	505	1740	1780
12	690	605	370	226	200	605	2350	1150	500	628	1530	1640
13	669	607	410	232	215	613	2700	1120	2170	856	1400	4390
14	660	702	430	238	250	626	3580	1070	3380	988	1340	14100
15	649	709	480	240	400	651	3740	1020	2280	1470	1740	1320
16	658	674	520	225	800	637	2670	1000	2860	1570	1520	1230
17	757	648	581	228	1400	584	2400	964	2160	1350	1360	1160
18	780	629	517	235	2500	545	2240	904	1730	1140	1220	1110
19	801	612	455	242	1650	535	2020	832	1450	1080	1090	1060
20	792	594	410	245	1270	505	1940	790	1280	1110	1020	1010
21	745	590	375	245	1010	490	1800	748	1260	1070	928	964
22	703	577	357	243	4250	475	1660	730	1300	898	858	922
23	678	571	338	244	2680	455	1950	724	1130	802	818	874
24	717	569	313	246	1880	445	2020	1010	2180	688	782	844
25	904	526	276	250	2190	445	1860	1670	3420	640	742	1500
26	1340	501	280	255	1790	440	1730	1220	2210	1160	1820	1460
27	1350	501	285	245	1690	440	1630	1210	1740	730	1470	2160
28	1160	524	295	240	3260	435	1590	1080	1490	772	2000	1910
29	1050	528	305	240	---	430	1710	1010	1330	754	3100	1630
30	974	519	315	240	---	425	2180	1000	1220	670	4210	1470
31	902	---	310	235	---	450	---	910	---	580	6010	---
TOTAL	27474	19416	13165	7472	29692	22802	60730	38642	41967	27388	90138	91634
MEAN	886	647	425	241	1060	736	2024	1247	1399	883	2908	3054
MAX	1350	890	581	295	4250	2560	3740	2270	3420	1570	13700	14100
MIN	649	501	276	217	190	425	525	724	500	505	520	844
CFSM	.57	.42	.28	.16	.69	.48	1.31	.81	.91	.57	1.88	1.98
IN.	.66	.47	.32	.18	.71	.55	1.46	.93	1.01	.66	2.17	2.21
AC-FT	54490	38510	26110	14820	58890	45230	120500	76650	83240	54320	178800	181800

CAL YR 1980 TOTAL 330470 MEAN 903 MAX 8000 MIN 210 CFSM .58 IN 7.96 AC-FT 655500
WTR YR 1981 TOTAL 470520 MEAN 1289 MAX 14100 MIN 190 CFSM .83 IN 11.33 AC-FT 933300

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	495	504	348	474	881	2,120	1,570	1,120	1,430	973	700	512	911
RUNOFF (INCHES)	0.37	0.36	0.26	0.35	0.46	1.58	1.13	0.84	1.03	0.73	0.52	0.37	8.01
STD. DEVIATION	0.33	0.38	0.18	0.34	0.39	0.93	0.94	0.54	0.80	0.60	0.43	0.27	3.53
PERCENT OF ANNUAL	4.6	4.5	3.2	4.4	5.7	20	14	10	13	9.1	6.5	4.6	----
PRECIP. (INCHES)	2.2	1.8	1.3	1.0	0.9	2.0	3.2	3.9	5.0	4.3	3.3	3.4	32.3

05412500 TURKEY RIVER AT GARBER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-62, 1978-81 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1957 to September 1962.
SUSPENDED-SEDIMENT DISCHARGE: October 1957 to September 1962.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 28.0°C Aug. 19, 1958; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 19,500 mg/L May 20, 1959; minimum daily mean, 5 mg/L Feb. 13, 1962.
SEDIMENT LOADS: Maximum daily, 294,000 tons (267,000 tonnes) June 26, 1959; minimum daily, 3 tons (2.7 tonnes) Feb. 7, 1961.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)
APR 09...	1130	12.0	1900	382	1960	--	--	--
AUG 03...	1100	22.0	13900	1610	60400	35	40	46
SEP 02...	1215	--	10400	1830	51400	17	18	20

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 09...	--	--	--	--	--	--	85
AUG 03...	58	85	87	90	98	100	--
SEP 02...	26	50	51	64	100	--	--

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
APR 09...	1310	1830	6	0	5	47	89	95	97	98	100	--
AUG 03...	1100	13900	7	0	5	43	74	85	90	94	97	100
SEP 02...	1330	10400	5	0	2	24	64	80	87	91	96	100

05414500 LITTLE MAQUOKETA RIVER NEAR DURANGO, IA

LOCATION.--Lat 42°33'18", long 90°44'46", in NW1/4 NE1/4 sec.5, T.89 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, on left bank 10 ft (3 m) upstream from bridge on county highway, 300 ft (91 m) upstream from Cloie Branch, 1.7 mi (2.7 km) east of Durango, 5.6 mi (9.0 km) northwest of court house at Dubuque, and 6.4 mi (10.3 km) upstream from mouth.

DRAINAGE AREA.--130 mi² (337 km²).

PERIOD OF RECORD.--October 1934 to current year.

REVISED RECORDS.--WSP 1508: 1936-38, 1939 (M), 1940, 1943 (M), 1946, 1948. WDR IA-76-01: 1975.

GAGE.--Water-stage recorder. Datum of gage is 612.03 ft (186.547 m) NGVD. Prior to Jan. 5, 1939, nonrecording gage at same site and datum.

REMARKS.--Records excellent except those for winter period, which are good. Several observations of water temperature were made during the year.

COOPERATION.--Nine discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--47 years, 84.9 ft³/s (2.404 m³/s), 8.87 in/yr (225 mm/yr), 61,510 acre-ft/yr (75.8 hm³/yr); median of yearly mean discharges, 73 ft³/s (2.07 m³/s), 7.6 in/yr (193 mm/yr), 52,900 acre-ft/yr (65.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s (1,130 m³/s) Aug. 2, 1972, gage height, 23.13 ft (7.050 m) in gage well, 23.8 ft (7.25 m), from floodmarks, on basis of slope-area measurement of peak flow; minimum daily, 5 ft³/s (0.14 m³/s) July 12, 13, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1925, reached a stage of about 22.1 ft (6.74 m), discharge, about 29,000 ft³/s (821 m³/s), computed by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,540 ft³/s (214 m³/s) June 15, gage height, 15.49 ft (4.721 m) at 1630 hours, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 17 ft³/s (0.48 m³/s) Jan. 5, Feb. 4-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	36	29	27	19	86	36	124	30	62	25	274
2	42	35	26	25	19	66	33	102	28	57	445	152
3	40	35	24	21	18	54	33	90	32	56	118	119
4	32	34	27	18	17	56	64	81	31	52	66	100
5	36	33	29	17	17	51	49	84	28	50	60	87
6	34	32	39	19	17	45	40	70	26	47	70	77
7	34	33	67	21	18	40	37	63	24	43	52	132
8	34	32	65	20	19	39	158	60	23	41	51	122
9	33	32	59	19	20	39	153	60	27	37	60	81
10	32	30	51	18	21	39	135	57	33	34	44	73
11	31	28	36	18	22	39	286	52	26	33	39	65
12	32	29	42	19	22	38	308	49	23	35	35	59
13	32	31	40	20	22	38	189	49	282	32	32	56
14	33	40	39	21	21	35	189	48	62	33	325	54
15	34	34	39	21	21	36	122	47	2070	73	141	50
16	46	32	39	22	54	35	107	46	289	45	73	47
17	62	30	37	21	169	33	103	44	150	35	60	45
18	38	30	34	21	117	33	83	43	110	32	52	45
19	34	29	32	21	64	31	81	42	87	63	47	46
20	32	27	29	22	47	31	75	41	77	94	42	44
21	32	29	27	22	46	31	66	39	390	47	39	43
22	31	29	28	23	1060	30	77	38	270	36	37	41
23	30	30	29	23	432	30	97	37	103	33	34	39
24	80	33	26	24	150	31	74	50	587	32	40	56
25	67	28	24	25	98	32	66	42	196	31	39	259
26	47	27	24	29	71	32	63	38	130	36	103	198
27	42	27	24	26	200	32	58	37	105	32	68	118
28	41	28	24	23	195	31	159	35	89	50	50	84
29	38	29	25	19	---	35	105	36	78	40	320	263
30	37	30	27	18	---	49	146	35	73	31	83	126
31	37	---	28	18	---	42	---	32	---	28	757	---
TOTAL	1216	932	1069	661	2996	1238	3192	1671	5479	1350	3417	2955
MEAN	39.2	31.1	34.5	21.3	107	39.9	106	53.9	183	43.5	110	98.5
MAX	80	40	67	29	1060	86	308	124	2070	94	757	274
MIN	30	27	24	17	17	30	33	32	23	28	25	39
CFSM	.30	.24	.27	.16	.82	.31	.82	.42	1.41	.34	.85	.76
IN.	.35	.27	.31	.19	.86	.35	.91	.48	1.57	.39	.98	.85
AC-FT	2410	1850	2120	1310	5940	2460	6330	3310	10870	2680	6780	5860

CAL YR 1980 TOTAL 23209 MEAN 63.4 MAX 2250 MIN 19 CFSM .49 IN 6.64 AC-FT 46040
WTR YR 1981 TOTAL 26176 MEAN 71.7 MAX 2070 MIN 17 CFSM .55 IN 7.49 AC-FT 51920

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	46	57	34	62	92	173	111	101	135	72	45	45	81
RUNOFF	0.41	0.49	0.30	0.55	0.74	1.53	0.95	0.90	1.16	0.64	0.40	0.39	6.46
STD. DEVIATION	0.44	0.84	0.18	0.58	0.55	1.06	0.66	0.85	1.56	0.77	0.23	0.32	4.38
PERCENT OF ANNUAL	4.7	5.8	3.5	6.5	8.7	18	11	11	14	7.6	4.7	4.6	----
PRECIP. (INCHES)	2.5	1.9	1.6	1.4	1.0	2.3	3.6	4.0	5.3	3.6	3.9	3.9	35.1

05418450 NORTH FORK MAQUOKETA RIVER AT FULTON, IA

LOCATION.--Lat 42°08'48", long 90°40'33" in N1/4 sec.25, T.85 N., R.2 E, Jackson County, Hydrologic Unit 07060006, on right downstream bank at bridge on State Highway 61, 7.8 mi (12.6 km) upstream from mouth, and 5.5 mi (8.8 km) north of junction of State Highway 64 and 61 and 0.5 mi (0.8 km) south of Fulton.

DRAINAGE AREA.--516 mi² (1,329 km²).

PERIOD OF RECORD.--July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 666.19 ft (203.055 m) NGVD. Nonrecording gage July 7 to September 22, 1977.

REMARKS.--Records fair except those for winter period, which are poor. March 18 to June 2, June 15 to July 17 and Aug. 31 to Sept. 24 which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s (303 m³/s) Aug. 31, 1981, gage height, 17.26 ft (5.261 m); minimum daily, 70 ft³/s (1.982 m³/s) July 11, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 18, 1974 reached a stage of 16.0 ft. (4.88 m), from floodmark, discharge, 10,000 ft³/s (283.2 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 22	2400	5,100	144	10.97	3.344	Aug. 15	0030	3,240	91.8	8.93	2.722
June 13	0315	3,590	102	9.32	2.841	Aug. 28	2100	3,210	90.9	8.85	2.697
June 16	0130	8,250	234	14.50	4.420	Aug. 31	unknown	*10,700	303	*17.26	5.261

Minimum daily discharge, 71 ft³/s (2.01 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	246	188	175	160	76	475	208	320	158	349	171	6520
2	239	184	171	143	77	343	205	290	158	322	184	2400
3	230	185	73	128	77	283	233	270	163	310	975	1030
4	224	186	100	120	77	266	260	252	163	298	604	800
5	219	182	180	118	76	249	258	233	161	286	409	672
6	214	180	210	118	76	234	240	222	156	274	437	612
7	211	183	242	117	75	219	235	210	149	260	486	596
8	209	183	332	115	74	209	270	200	149	247	373	688
9	208	182	287	110	73	204	510	193	154	242	319	628
10	201	178	250	109	72	200	440	188	164	219	280	516
11	195	172	205	106	71	199	1000	177	159	226	255	468
12	189	169	180	104	72	197	870	178	151	216	236	440
13	189	177	210	109	74	195	760	187	1170	226	224	406
14	191	198	185	115	75	191	670	200	630	239	775	373
15	195	192	190	122	96	191	600	196	3770	266	1930	349
16	202	180	200	120	165	189	520	190	3950	257	649	334
17	232	176	200	118	450	185	485	182	855	195	460	322
18	220	175	180	122	530	183	410	175	532	182	379	310
19	201	173	165	130	440	178	375	173	424	184	331	307
20	194	173	160	134	350	177	355	169	379	180	297	295
21	190	174	155	138	315	174	348	167	364	207	274	286
22	185	172	152	138	2300	172	400	167	600	207	257	280
23	183	176	149	136	2720	170	360	162	736	180	245	274
24	219	180	144	138	815	173	330	152	1890	178	238	266
25	267	171	135	142	512	175	300	156	1620	178	232	453
26	229	173	134	143	397	178	280	170	805	178	385	702
27	214	175	135	115	692	180	270	172	560	182	453	712
28	209	181	140	91	564	185	420	168	457	198	1220	530
29	197	180	155	82	---	200	380	164	424	191	851	467
30	190	177	168	78	---	220	350	162	385	189	414	571
31	189	---	170	76	---	225	---	160	---	178	9460	---
TOTAL	6481	5375	5532	3695	11391	6619	12332	6005	21436	7044	23803	22607
MEAN	209	179	178	119	407	214	411	194	715	227	768	754
MAX	267	198	332	160	2720	475	1000	320	3950	349	9460	6520
MIN	183	169	73	76	71	170	205	152	149	178	171	266
CFSM	.41	.35	.35	.23	.79	.42	.80	.38	1.39	.44	1.49	1.46
IN.	.47	.39	.40	.27	.82	.48	.89	.43	1.55	.51	1.72	1.63
AC-FT	12860	10660	10970	7330	22590	13130	24460	11910	42520	13970	47210	44840

CAL YR 1980 TOTAL 102956 MEAN 281 MAX 4500 MIN 73 CFSM .55 IN 7.42 AC-FT 204200
WTR YR 1981 TOTAL 132320 MEAN 363 MAX 9460 MIN 71 CFSM .70 IN 9.54 AC-FT 262500

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'05", long 90°38'04", in SW1/4 NE1/4 sec.17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060006, on right bank 500 ft (152 m) upstream from bridge on State Highway 62, 1,200 ft (366 m) upstream from Prairie Creek, 2.0 mi (3.2 km) northeast of Maquoketa, 2.2 mi (3.5 km) downstream from North Fork, and 26.7 mi (43.0 km) upstream from mouth.

DRAINAGE AREA.--1,553 mi² (4,022 km²).

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage recorder. Datum of gage is 625.96 ft (190.793 m) NGVD. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at same site at datum 10.00 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation caused by powerplant 4 mi (6.4 km) above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--68 years, 1,202 ft³/s (34.04 m³/s), 8.85 in/yr (225 mm/yr), 733,200 acre-ft/yr (904 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s (1,360 m³/s) June 27, 1944, gage height, 24.70 ft (7.529 m) at datum then in use; minimum daily, 105 ft³/s (2.97 m³/s) Feb. 11-20, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft (7.16 m), discharge, 43,000 ft³/s (1,220 m³/s), at datum in use prior to Oct. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft³/s (212 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 13	unknown	12,000	340	24.3	7.41	Aug. 15	0915	10,600	300	23.22	7.077
June 16	0015	14,500	411	26.50	8.077	Aug. 31	1145	*24,000	680	*29.60	9.022

Minimum daily discharge, 269 ft³/s (7.62 m³/s) Feb. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	808	779	435	490	360	1600	623	1070	552	1200	661	16100
2	788	705	447	450	355	1480	548	1070	667	1140	665	13300
3	696	681	310	430	345	1170	608	1040	593	1060	2410	10200
4	686	653	320	420	335	1040	617	980	376	978	4480	4470
5	667	661	436	405	315	970	691	943	530	920	3150	3370
6	780	587	541	390	305	938	714	898	539	888	3700	2790
7	778	649	540	370	300	837	656	842	508	852	3860	2550
8	635	590	831	355	290	788	723	803	505	794	2370	2650
9	593	597	778	350	285	713	871	799	533	742	1900	2260
10	574	580	660	350	280	716	919	748	580	717	1630	2140
11	548	561	580	370	280	706	1470	685	520	693	1480	1840
12	521	555	535	385	278	702	1630	717	510	685	1350	1720
13	584	563	620	395	273	638	1540	707	6930	665	1330	1540
14	571	609	590	405	269	650	2020	658	2560	693	3760	1440
15	838	586	600	412	275	628	1820	686	5260	717	8500	1360
16	609	546	620	420	620	611	1650	604	10100	685	3380	1270
17	567	575	595	435	1100	648	1490	671	2970	821	2230	1210
18	497	552	540	460	1800	561	1280	630	2080	812	1710	1170
19	633	533	420	475	1410	619	1190	548	1600	721	1520	1140
20	562	567	390	480	963	535	1170	564	1450	746	1240	1120
21	541	528	388	480	850	541	1070	560	1430	697	1140	1110
22	612	527	380	485	3170	556	1030	567	1620	705	1070	1060
23	607	481	370	490	4870	576	1040	577	1690	579	1010	1010
24	661	479	345	500	2660	564	1010	638	4180	634	956	996
25	733	448	335	500	1860	545	937	621	4290	599	902	1280
26	679	419	350	480	1530	546	905	570	3870	591	1000	2160
27	656	433	400	425	1950	544	883	577	2550	653	1270	3070
28	664	482	450	395	1810	555	997	574	1930	701	2130	2930
29	1400	448	490	380	---	567	1130	584	1610	738	3000	2610
30	1290	451	525	375	---	633	1070	631	1470	734	1460	2360
31	855	---	530	365	---	575	---	566	---	717	19900	---
TOTAL	21633	16825	15351	13122	29338	22752	32302	22128	64003	23877	85164	92226
MEAN	698	561	495	423	1048	734	1077	714	2133	770	2747	3074
MAX	1400	779	831	500	4870	1600	2020	1070	10100	1200	19900	16100
MIN	497	419	310	350	269	535	548	548	376	579	661	996
CFSM	.45	.36	.32	.27	.68	.47	.69	.46	1.37	.50	1.77	1.98
IN.	.52	.40	.37	.31	.70	.54	.77	.53	1.53	.57	2.04	2.21
AC-FT	42910	33370	30450	26030	58190	45130	64070	43890	126900	47360	168900	182900

CAL YR 1980 TOTAL 328549 MEAN 898 MAX 6880 MIN 290 CFSM .58 IN 7.87 AC-FT 651700
WTR YR 1981 TOTAL 438721 MEAN 1202 MAX 19900 MIN 269 CFSM .77 IN 10.51 AC-FT 870200

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	673	781	541	788	1,090	1,940	1,280	1,120	1,530	1,080	706	836	1,030
RUNOFF (INCHES)	0.50	0.56	0.40	0.58	0.73	1.44	0.92	0.83	1.10	0.80	0.52	0.60	9.01
STD. DEVIATION	0.36	0.64	0.21	0.49	0.45	0.88	0.57	0.54	0.90	0.74	0.26	0.50	2.84
PERCENT OF ANNUAL	5.5	6.2	4.4	6.4	8.1	16	10	9.2	12	8.9	5.8	6.7	----
PRECIP. (INCHES)	2.5	1.9	1.7	1.5	1.1	2.3	3.3	3.8	5.2	3.5	3.4	3.8	34.1

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER QUALITY RECORDS

LOCATION.--Samples collected at bridge on Highway 62, 500 ft (152 m) downstream from gage.

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1978 to current year.
WATER TEMPERATURES: April 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During winter periods samples are collected in open water channel or through ice cover.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 600 micromhos June 7, 1978; minimum daily, 160 micromhos June 16, 1981.
WATER TEMPERATURES: Maximum daily, 27.5°C Aug. 7, 1979, July 13, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 14,700 mg/L June 13, 1981; minimum daily mean, 12 mg/L Feb. 7, 8, 1981.
SEDIMENT LOADS: Maximum daily, 361,000 tons (327,000 tonnes) Aug. 31, 1981; minimum daily, 9.4 tons (8.5 tonnes) Feb. 8, 1981.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 570 micromhos Sept. 16; minimum daily, 160 micromhos June 16.
WATER TEMPERATURES: Maximum daily, 27.0°C Aug. 24; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 14,700 mg/L June 13: minimum daily mean, 12 mg/L Feb. 7,8.
SEDIMENT LOADS: Maximum daily, 361,000 tons (327,000 tonnes) Aug. 31; minimum daily, 9.4 tons (8.5 tonnes) Feb. 8.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	510	440	---	---	---	400	520	---	---	480	165
2	---	---	---	---	---	420	400	---	450	510	490	225
3	460	490	430	---	---	---	430	490	480	500	350	315
4	---	510	430	---	---	---	400	---	---	480	320	440
5	---	495	---	---	---	510	---	450	---	---	380	---
6	---	420	450	460	---	480	400	---	450	480	320	---
7	500	---	550	---	---	420	420	460	---	---	400	---
8	520	---	---	---	---	420	420	---	440	470	440	500
9	---	---	520	---	---	480	420	410	---	470	---	---
10	---	420	---	---	---	460	---	---	450	---	510	---
11	---	---	420	---	---	490	370	420	---	460	540	---
12	---	440	480	420	---	410	360	440	470	---	---	---
13	---	---	---	---	---	---	370	---	240	---	---	---
14	---	---	---	---	---	---	470	410	260	460	300	540
15	---	420	---	---	---	440	410	420	180	500	225	---
16	---	---	---	---	---	---	---	420	160	510	360	570
17	---	---	---	---	---	420	---	420	---	---	---	---
18	---	430	---	---	---	---	---	420	480	500	550	510
19	---	---	---	470	---	410	470	440	---	---	---	---
20	---	420	460	---	420	---	---	430	490	500	---	510
21	---	---	---	---	440	400	460	---	500	480	---	560
22	530	420	---	---	345	---	---	420	510	520	---	485
23	---	420	460	---	360	400	440	---	---	510	---	500
24	---	420	---	---	440	400	---	410	320	500	540	490
25	---	---	---	470	---	410	---	490	340	---	---	520
26	---	470	---	---	---	390	440	440	460	480	---	---
27	---	480	---	460	460	380	---	440	---	440	---	---
28	---	480	---	---	---	380	520	460	---	460	---	460
29	---	480	510	420	---	---	480	500	---	440	---	460
30	---	490	500	---	---	410	520	---	530	---	---	510
31	520	---	---	---	---	380	---	430	---	---	160	---

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER QUALITY REORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	5.5	3.0	---	---	---	11.0	12.0	---	---	23.0	19.0
2	---	---	---	---	---	1.5	11.5	---	21.5	23.0	21.0	---
3	12.5	12.5	1.0	---	---	---	12.0	15.5	21.5	22.5	20.0	---
4	---	6.5	2.5	---	---	---	8.5	---	---	23.0	22.0	18.0
5	---	6.0	---	---	---	4.0	---	14.0	---	---	20.0	---
6	---	---	3.0	.0	---	4.5	11.0	---	23.0	24.0	22.0	---
7	15.0	8.0	3.0	---	---	5.0	12.0	---	---	---	21.0	---
8	15.0	---	---	---	---	---	12.0	---	21.5	26.0	22.5	---
9	---	---	2.5	---	---	4.0	12.0	12.0	---	26.0	---	---
10	---	4.5	---	---	---	5.0	---	---	21.0	---	---	---
11	---	---	3.0	---	---	5.0	14.0	---	---	25.0	21.0	---
12	---	7.0	3.5	---	---	6.5	12.5	12.0	23.0	---	---	---
13	---	---	---	---	---	---	13.5	---	22.5	---	---	---
14	---	---	---	---	---	---	---	14.0	---	23.5	---	---
15	---	2.0	---	---	---	---	12.5	15.0	---	24.0	---	20.0
16	---	---	---	---	---	---	---	---	---	24.0	20.0	---
17	---	---	---	---	---	---	---	14.0	---	---	---	---
18	---	2.0	---	---	---	---	---	13.5	20.5	24.0	20.0	17.0
19	---	---	---	.5	---	---	12.5	14.0	---	---	---	---
20	---	2.5	.0	---	3.0	---	---	---	18.0	24.0	---	17.0
21	---	---	---	---	---	5.0	10.0	---	18.5	23.0	---	---
22	12.0	3.0	---	---	.5	---	---	14.5	19.0	22.0	---	14.5
23	---	2.0	.0	---	1.0	8.5	8.5	---	---	21.5	---	14.0
24	---	1.0	---	---	4.0	8.5	---	17.0	19.0	22.0	27.0	19.0
25	---	---	---	.0	---	8.0	---	20.0	20.0	---	---	---
26	---	1.5	---	---	---	8.5	16.0	18.0	21.0	19.0	---	---
27	---	1.0	---	.0	---	10.0	---	14.0	---	19.0	---	---
28	---	1.0	---	---	---	11.0	---	21.5	---	15.0	---	---
29	---	2.0	.0	.0	---	---	13.0	22.5	---	17.5	---	---
30	---	3.5	.0	---	---	11.0	13.0	---	23.0	---	---	---
31	7.0	---	---	---	---	11.0	---	21.0	---	---	18.5	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	106	231	76	160	44	52	42	56	23	22	350	1510
2	137	291	75	143	41	49	42	51	17	16	323	1290
3	95	179	64	118	54	45	40	46	19	18	244	771
4	90	167	67	118	50	43	45	51	19	17	172	483
5	77	139	68	121	108	127	47	51	19	16	139	364
6	75	150	83	132	173	253	40	51	15	12	150	400
7	88	185	99	173	111	162	41	41	12	9.7	135	308
8	73	128	96	153	194	435	38	36	12	9.4	144	306
9	71	114	83	134	257	540	36	34	13	10	109	210
10	65	101	68	102	241	429	34	32	14	11	113	218
11	58	86	54	82	318	498	35	35	15	11	129	246
12	53	75	45	67	196	283	37	38	15	11	177	335
13	65	102	42	64	141	236	35	37	16	12	202	348
14	55	85	41	67	128	204	32	35	17	12	182	319
15	138	312	39	62	122	198	32	36	18	13	161	273
16	126	207	39	57	120	201	29	33	24	40	156	257
17	99	152	47	73	114	183	26	31	99	294	149	261
18	70	94	68	97	105	153	26	32	337	1640	139	211
19	96	164	53	76	98	111	31	40	365	1390	112	187
20	63	95	29	44	95	100	42	54	294	764	102	147
21	55	80	33	47	107	112	43	56	193	443	131	191
22	154	284	69	98	128	131	43	56	4900	41900	150	225
23	92	151	65	84	115	115	43	57	6150	80900	153	238
24	76	136	70	91	71	66	40	54	6740	52000	152	231
25	109	216	60	73	47	43	39	53	4790	24100	142	209
26	97	178	40	45	43	41	101	131	1900	7850	132	195
27	78	138	29	34	53	57	250	287	800	4210	139	204
28	61	109	50	65	60	73	244	260	700	3420	147	220
29	190	718	73	88	60	79	55	56	---	---	135	207
30	100	348	49	60	54	77	26	26	---	---	122	209
31	59	136	---	---	46	66	25	25	---	---	157	244
TOTAL	---	5627	---	2728	---	8162	---	1881	---	219151.1	---	10814

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	194	326	203	686	170	253	310	1000	185	330	2800	122000
2	175	259	217	627	175	315	287	883	195	350	2040	73300
3	187	258	207	581	360	576	240	687	1240	10800	1560	43000
4	161	268	198	524	258	262	175	462	2220	26900	940	11300
5	175	326	150	382	238	341	152	378	1490	12700	455	4140
6	177	341	119	289	227	330	140	336	1750	17500	300	2260
7	172	305	108	246	217	298	128	294	1000	10400	225	1550
8	190	371	104	225	203	277	113	242	380	2430	927	5630
9	489	1150	102	220	193	278	140	280	330	1690	1140	6960
10	642	1690	119	240	289	453	210	407	298	1310	720	4160
11	999	3970	143	264	251	352	251	470	287	1150	570	2830
12	1050	4620	133	257	212	292	279	516	299	1090	510	2370
13	862	3680	126	241	14700	356000	310	557	258	926	500	2080
14	760	4150	126	224	4250	29400	351	657	3980	84600	495	1920
15	458	2250	122	226	8780	190000	349	676	4720	108000	323	1190
16	305	1360	117	191	6100	166000	249	461	2000	18300	139	477
17	229	921	98	178	1760	14100	313	694	780	4700	99	323
18	164	567	90	153	785	4410	198	434	260	1200	72	227
19	123	395	86	127	460	1990	139	271	212	870	69	212
20	147	464	81	123	360	1410	157	316	198	663	81	245
21	130	376	78	118	348	1340	187	352	180	554	147	441
22	125	348	86	132	640	2800	231	440	170	491	100	286
23	122	343	88	137	3210	14600	230	360	160	436	65	177
24	124	338	102	176	6370	71900	196	336	148	382	64	172
25	117	296	123	206	4270	49500	167	270	142	346	434	2010
26	133	326	142	219	2020	21100	138	220	178	481	860	5020
27	134	319	101	157	1910	13200	110	194	303	1040	385	3190
28	523	1590	108	167	680	3540	151	286	433	2490	485	3840
29	595	1820	124	196	500	2170	191	381	578	4680	1010	7120
30	203	586	197	336	362	1440	185	367	341	1340	540	3440
31	---	---	185	283	---	---	185	358	6080	381000	---	---
TOTAL	---	33812	---	8031	---	948927	---	13585	---	649149	---	312870

TOTAL LOAD FOR YEAR: 2211637.1 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
NOV 03...	1430	12.5	684	81	150	--	--
FEB 23...	0950	1.0	6900	6310	118000	30	32
MAR 09...	1400	6.0	790	84	179	--	--
APR 14...	1000	--	2420	772	5040	43	46
JUN 02...	1000	21.5	561	152	230	--	--
JUL 16...	0715	--	594	198	318	--	--
AUG 24...	1330	27.0	962	137	356	--	--
SEP 01...	1130	--	15300	2940	121000	27	31

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 03...	--	--	--	--	--	--	58
FEB 23...	36	50	--	--	--	--	94
MAR 09...	--	--	--	--	--	--	90
APR 14...	52	60	--	--	--	--	97
JUN 02...	--	--	--	--	--	--	97
15...	52	66	99	99	100	--	--
JUL 16...	--	--	--	--	--	--	94
AUG 24...	--	--	--	--	--	--	91
SEP 01...	38	49	77	78	80	88	--

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
NOV												
03...	1430	684	9	--	0	3	41	87	95	99	100	--
MAR												
09...	1400	790	7	1	1	12	65	84	89	93	97	100
APR												
14...	1300	2330	9	3	4	8	39	78	92	96	99	100
JUN												
02...	1000	561	9	1	1	5	50	80	88	95	99	100
16...	1045	12500	6	--	0	5	41	82	94	97	100	--
AUG												
24...	1500	962	8	0	1	8	42	70	82	90	94	100
SEP												
01...	1215	15300	6	1	1	12	61	90	95	97	99	100

05420500 MISSISSIPPI RIVER AT CLINTON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°46'53", long 90°15'04", in NW1/4 sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07080101, on right bank at foot of Seventh Avenue in Camanche, 5.0 mi (8.0 km) upstream from Wapsipinicon River, 6.4 mi (10.3 km) downstream from Clinton, 10.6 mi (17.1 km) downstream from dam 13, and at mile 511.8 (823.5 km) upstream from Ohio River. Prior to June 6, 1969, at site 400 ft (122 m) downstream.

DRAINAGE AREA.--85,600 mi² (221,700 km²), approximately, at Fulton-Lyons Bridge at Clinton.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire").

REVISED RECORDS.--WRD IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft (171.505 m) NGVD. Oct. 1, 1955, to June 6, 1969, water-stage recorder at site 400 ft (121 m) downstream at same datum. Auxiliary water-stage recorder at dam 13 since Oct. 1, 1958. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for winter period, which are poor. Minor flow regulation caused by navigation dams.

COOPERATION.--One discharge measurement and discharge data at Lock and Dam No.13 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--108 years, 47,130 ft³/s (1,335 m³/s), 7.48 in/yr (190 mm/yr), 34,150,000 acre-ft/yr (42,110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 307,000 ft³/s (8,690 m³/s) Apr. 28, 1965; maximum gage height, 24.65 ft (7.513 m) Apr. 28, 1965; minimum daily discharge, 6,500 ft³/s (184 m³/s) Dec. 25-27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828, that of Apr. 28, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 113,000 ft³/s (3,200 m³/s) Oct. 1; maximum gage height, 14.61 ft (4.453 m) Oct. 2, minimum daily discharge, 17,000 ft³/s (481 m³/s) Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113000	50600	23300	21000	21800	69200	36400	60300	38100	66000	39900	80900
2	110000	50600	26900	21600	21000	67600	38500	60900	40300	64600	42800	83400
3	96000	50900	27800	22200	20000	62900	38700	62500	40500	65800	48300	83300
4	78000	49400	26400	22800	19000	58000	47700	64500	39900	68400	57600	78900
5	61000	47100	26000	23000	17400	55500	57300	68700	36100	68100	53800	72800
6	51000	42400	29200	22800	17000	53600	62300	67700	28500	67100	53000	69100
7	45800	37800	32200	22000	17600	48600	67400	65000	28500	66300	52100	63400
8	45700	36600	34700	21200	17900	42800	73300	63800	28700	65900	51600	60600
9	44000	36300	35800	21500	18000	37000	77300	65900	29500	65400	51000	58200
10	38400	35400	32800	22000	18000	31600	77600	71300	31600	60600	49100	53700
11	35800	34100	29700	22000	18000	30200	82800	75100	32900	53900	46700	49500
12	34200	33100	27200	21800	17900	33000	90500	81300	31300	50700	45400	48200
13	33900	31900	25000	21600	17900	38200	93300	89300	35200	52800	45100	47000
14	34000	34000	21600	21600	17800	40400	96800	92700	46300	54500	52500	43600
15	34700	35300	19000	21400	17800	40600	93600	92400	61100	58200	60500	39400
16	33500	34900	18600	20900	17300	39900	86800	86300	65000	62500	56300	31700
17	32100	33200	20600	20000	18000	39600	79100	78500	60800	60300	47100	25200
18	32400	30900	22000	19800	25300	40000	68300	70600	47900	59000	47100	27000
19	34200	29900	23000	19700	30500	40100	61500	58200	46600	56000	45800	26800
20	38300	30800	22000	19600	34900	39600	58700	50700	49600	54500	46100	29800
21	41500	31500	19600	19400	37200	35300	54900	43700	54100	54000	43200	31500
22	39500	34100	20800	19500	48200	31100	52500	36500	59800	51100	36200	31800
23	38000	35200	23400	19700	65400	31200	56800	32300	65500	49800	32400	32600
24	35800	37000	23800	19900	71000	29700	56500	34600	71600	49000	32500	30800
25	37300	37500	24000	20100	69000	31500	54800	43400	75400	47000	32500	30000
26	42000	36200	21500	20500	64800	33500	52400	43200	75200	47900	34900	34600
27	44600	32900	20000	20900	61300	33300	51600	41500	74700	47500	39400	37400
28	44800	28300	18400	21200	68400	30800	52300	35900	73700	44800	39800	37100
29	45100	26200	18000	21400	---	28900	55200	28500	72400	44000	43700	38900
30	47000	23900	19000	21800	---	28800	57200	29600	68800	42600	50300	39600
31	48400	---	20200	22000	---	33700	---	33200	---	39700	63500	---
TOTAL	1490000	1088000	752500	654900	888100	1257200	1932100	1828100	1498600	1738000	1440200	1416800
MEAN	48060	36270	24270	21130	31720	40550	64400	58970	49950	56060	46460	47230
MAX	113000	50900	35800	23000	71000	69200	96800	92700	75400	68400	63500	83400
MIN	32100	23900	18000	19400	17000	28800	36400	28500	28500	39700	32400	25200
CFSM	.56	.42	.28	.25	.37	.47	.75	.69	.58	.65	.54	.55
IN.	.65	.47	.33	.28	.39	.55	.84	.79	.65	.76	.63	.62
AC-FT	2955000	2158000	1493000	1299000	1762000	2494000	3832000	3626000	2972000	3447000	2857000	2810000

CAL YR 1980 TOTAL 15500000 MEAN 42350 MAX 113000 MIN 16000 CFSM .50 IN 6.74 AC-FT 30740000
WTR YR 1981 TOTAL 15984500 MEAN 43790 MAX 113000 MIN 17000 CFSM .51 IN 6.95 AC-FT 31710000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	34,700	34,000	27,100	25,900	26,800	49,400	93,300	75,500	62,500	52,700	34,700	34,600	46,000
RUNOFF (INCHES)	0.47	0.44	0.36	0.35	0.33	0.66	1.22	1.02	0.82	0.71	0.47	0.45	7.30
STD. DEVIATION	0.23	0.18	0.11	0.11	0.11	0.22	0.49	0.43	0.34	0.33	0.23	0.18	1.79
PERCENT OF ANNUAL	6.4	6.0	4.9	4.8	4.5	9.0	17	14	11	9.7	6.4	6.2	----
PRECIP. (INCHES)	2.2	1.8	1.6	1.4	1.0	2.1	3.1	3.3	3.9	3.4	3.5	3.3	30.7

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected near bridge on State Highway 136 in Clinton, 6.4 mi (10.3 km) upstream from discharge station.

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--Water years 1974 to current year.
SPECIFIC CONDUCTANCE: October 1974 to September 1976; October 1978 to September 1981 (discontinued).
WATER TEMPERATURES: October 1974 to current year.

REMARKS.--Temperature data were collected at Dam 13 (Sta. 05420400).

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 560 micromhos Nov. 24 to Dec. 3, 1979; minimum daily, 220 micromhos Apr. 19,20, 1976; Nov. 8-18, 1980.
WATER TEMPERATURES: Maximum, 30.5°C July 15, 1977; minumum, 0.0°C on many days during winter periods each year.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 400 micromhos Jan. 5; minimum daily, 220 micromhos Nov. 8-18.
WATER TEMPERATURES: Maximum, 29.0°C July 10,12, minimum, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 19980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	300	260	320	360	360	300	320	340	360	320	300	340
2	300	240	320	360	360	300	320	340	360	320	320	340
3	300	240	320	360	360	300	320	340	360	320	320	380
4	300	240	340	360	360	300	320	340	360	320	320	380
5	280	240	340	360	360	300	320	340	360	300	320	380
6	280	240	340	360	360	300	320	340	380	300	320	380
7	280	240	340	360	360	320	320	340	380	300	320	380
8	260	220	360	360	360	320	320	340	380	300	320	380
9	240	220	360	360	360	320	320	340	380	300	320	380
10	240	220	360	360	360	320	320	340	380	300	320	380
11	240	220	360	360	360	320	320	340	380	300	320	380
12	240	220	360	360	340	320	320	360	380	300	320	380
13	240	220	360	360	340	320	320	360	380	300	320	380
14	240	220	360	360	320	320	340	360	380	300	320	380
15	260	220	360	360	320	320	340	340	380	300	320	380
16	240	220	360	360	320	320	340	340	380	300	320	---
17	260	220	360	360	320	320	340	340	380	300	320	---
18	260	220	360	360	320	320	340	360	380	300	320	---
19	260	240	360	360	300	320	340	360	380	320	320	---
20	280	240	360	360	300	320	340	360	360	320	320	---
21	280	240	360	360	300	320	340	360	360	320	340	---
22	280	240	360	360	300	320	340	360	340	320	340	---
23	280	260	360	360	300	320	340	360	340	320	340	---
24	280	280	360	360	300	320	340	380	360	320	340	---
25	280	300	360	360	300	320	340	380	360	300	340	---
26	280	300	360	360	300	320	360	360	360	300	340	---
27	280	300	360	360	300	320	360	360	340	320	340	---
28	280	300	360	360	300	320	360	360	340	320	340	---
29	260	320	360	360	---	320	360	360	340	320	340	---
30	260	320	360	360	---	320	360	380	320	320	340	---
31	260	---	360	360	---	320	---	380	---	320	340	---

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	7.0	3.0	.0	.0	4.0	12.0	18.0	23.0	26.0	27.0	23.0
2	18.0	7.0	2.0	.0	.0	4.0	13.0	19.0	23.0	26.0	27.0	22.0
3	18.0	7.0	2.0	.0	.0	4.0	12.0	19.0	23.0	26.0	27.0	22.0
4	18.0	7.0	2.0	.0	.0	5.0	13.0	20.0	23.0	27.0	27.0	22.0
5	17.0	7.0	2.0	.0	.0	5.0	14.0	20.0	23.0	27.0	27.0	22.0
6	17.0	7.0	1.0	.0	.0	5.0	14.0	20.0	23.0	27.0	27.0	21.0
7	16.0	7.0	1.0	.0	.0	5.0	14.0	20.0	24.0	27.0	27.0	21.0
8	15.0	7.0	.0	.0	.0	5.0	14.0	20.0	24.0	27.0	27.0	21.0
9	14.0	7.0	.0	.0	.0	5.0	15.0	20.0	24.0	27.0	27.0	21.0
10	14.0	7.0	.0	.0	.0	5.0	15.0	21.0	24.0	27.0	26.0	21.0
11	13.0	7.0	.0	.0	.0	5.0	14.0	21.0	24.0	26.0	26.0	21.0
12	13.0	7.0	.0	.0	1.0	5.0	15.0	21.0	24.0	26.0	25.0	21.0
13	12.0	7.0	.0	.0	1.0	5.0	15.0	21.0	25.0	25.0	26.0	21.0
14	11.0	7.0	.0	.0	1.0	6.0	16.0	21.0	25.0	26.0	26.0	21.0
15	11.0	6.0	.0	.0	1.0	6.0	16.0	20.0	25.0	26.0	25.0	21.0
16	11.0	6.0	.0	.0	1.0	6.0	16.0	20.0	25.0	26.0	26.0	---
17	11.0	6.0	.0	.0	1.0	7.0	16.0	20.0	25.0	27.0	25.0	---
18	10.0	6.0	.0	.0	1.0	8.0	16.0	21.0	25.0	27.0	25.0	---
19	10.0	6.0	.0	.0	2.0	8.0	16.0	21.0	25.0	27.0	26.0	---
20	10.0	6.0	.0	.0	2.0	9.0	17.0	21.0	25.0	27.0	26.0	---
21	10.0	5.0	.0	.0	2.0	9.0	17.0	21.0	25.0	27.0	26.0	---
22	10.0	5.0	.0	.0	2.0	9.0	17.0	22.0	25.0	27.0	26.0	---
23	9.0	5.0	.0	.0	3.0	10.0	17.0	22.0	25.0	27.0	26.0	---
24	9.0	5.0	.0	.0	3.0	11.0	18.0	22.0	25.0	27.0	26.0	---
25	8.0	4.0	.0	.0	3.0	11.0	18.0	23.0	25.0	27.0	24.0	---
26	7.0	4.0	.0	.0	3.0	11.0	18.0	23.0	25.0	27.0	24.0	---
27	7.0	4.0	.0	.0	3.0	12.0	18.0	23.0	26.0	27.0	26.0	---
28	7.0	4.0	.0	.0	3.0	12.0	18.0	23.0	25.0	27.0	24.0	---
29	7.0	3.0	.0	.0	---	12.0	19.0	22.0	26.0	27.0	24.0	---
30	7.0	3.0	.0	.0	---	12.0	18.0	22.0	26.0	27.0	23.0	---
31	7.0	---	.0	.0	---	12.0	---	23.0	---	27.0	23.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 07...	1200	52200	264	7.8	13.0	20	8.3	80	K60	K33
NOV 06...	1200	23800	300	7.7	6.0	19	11.2	91	K300	<10
DEC 01...	1230	34300	315	8.1	2.0	11	14.6	106	K13	<10
JAN 05...	1100	25600	400	8.6	.0	1.1	17.5	122	K360	K45
FEB 02...	1045	30800	355	7.9	.0	4.1	19.5	136	K23	K15
MAR 05...	1200	61800	265	8.1	2.0	15	12.7	93	K40	490
APR 02...	1100	40550	285	8.7	13.5	33	11.9	113	170	320
MAY 05...	1230	71200	280	8.4	15.0	29	9.2	92	K13	K42
JUN 01...	1200	41900	295	8.1	22.5	24	7.0	81	K38	K27
JUL 07...	1200	67000	300	7.2	26.0	25	4.9	61	K87	50
AUG 03...	1300	53900	360	7.6	24.0	16	9.0	105	K80	K38
31...	1130	73400	325	8.2	22.5	95	6.5	76	>1000	>1000

K Results based on colony count outside the acceptable range (non-ideal colony count).

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
OCT 07...	120	20	29	11	4.9	8	.2	2.6	98	17
NOV 06...	130	13	32	13	6.2	9	.2	2.4	--	22
DEC 01...	150	5	35	14	6.7	9	.2	2.2	--	--
JAN 05...	180	40	44	17	12	13	.4	2.2	--	38
FEB 02...	180	27	43	17	9.3	10	.3	1.8	--	25
MAR 05...	120	37	30	12	7.7	11	.3	4.4	--	19
APR 02...	130	--	30	14	9.7	13	.4	2.6	--	23
MAY 05...	140	--	34	13	7.4	10	.3	2.5	--	1.0
JUN 01...	140	--	36	13	7.0	9	.3	2.3	--	4.0
JUL 07...	130	--	34	12	6.8	10	.3	2.1	--	3.7
AUG 03...	160	--	41	14	6.4	8	.2	2.5	--	<5.0
31...	150	--	36	15	6.6	8	.3	3.1	--	<5.0

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 07...	13	.2	9.1	177	149	.24	24900	.80	.040	.05
NOV 06...	9.8	.2	7.9	178	159	.24	11400	.70	.070	.08
DEC 01...	11	.2	6.5	--	--	--	--	.87	.040	.05
JAN 05...	17	.1	7.5	254	227	.35	17600	1.1	.090	.11
FEB 02...	10	.1	7.0	212	208	.29	17600	.96	.050	.06
MAR 05...	13	.1	8.7	154	155	.21	25700	1.8	.470	--
APR 02...	13	.2	.0	170	159	.23	18600	.16	.080	--
MAY 05...	16	.1	.2	179	148	.24	34400	.28	.110	--
JUN 01...	9.1	.1	.7	173	145	.24	19600	.21	.070	--
JUL 07...	11	.1	7.3	179	148	.24	32400	1.0	.200	--
AUG 03...	11	.5	11	207	177	.28	30100	1.3	.250	--
31...	21	.1	5.9	180	166	.24	35700	1.2	.220	--

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT 07...	1.3	1.30	.30	1.0	2.1	9.3	.520	1.6	.100
NOV 06...	.85	.92	.36	.56	1.6	7.2	.280	.86	.160
DEC 01...	1.1	1.10	.50	.60	2.0	8.7	.090	.28	.050
JAN 05...	1.5	1.60	.20	1.4	2.7	12	.090	.28	.050
FEB 02...	1.3	1.30	.47	.83	2.3	10	.090	.28	.030
MAR 05...	1.5	2.00	.50	1.5	3.8	17	.280	.86	.160
APR 02...	1.9	2.00	1.1	.88	2.2	9.6	.210	.64	.040
MAY 05...	1.4	1.50	.00	1.7	1.8	7.9	.210	.64	.040
JUN 01...	1.5	1.60	.80	.80	1.8	8.0	.350	1.1	.070
JUL 07...	1.4	1.60	.63	.97	2.6	12	.190	.58	.090
AUG 03...	1.2	1.40	.10	1.3	2.7	12	.190	.58	.130
31...	1.3	1.50	.50	1.0	2.7	12	.260	.80	.130

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
OCT								
07...	1200	7000	27	3810	98	13	--	--
NOV								
06...	1200	--	30	1930	98	--	24	1.5
DEC								
01...	1230	--	15	1390	96	12	--	--
JAN								
05...	1100	--	36	2490	72	18	--	--
FEB								
02...	1045	--	6	499	100	--	8.7	.7
MAR								
05...	1200	9800	37	6170	98	--	--	--
APR								
02...	1100	--	71	7770	98	22	--	--
MAY								
05...	1230	23000	96	18500	95	--	8.8	2.8
JUN								
01...	1200	22000	--	--	--	15	--	--
JUL								
07...	1200	23000	82	14800	94	11	--	--
AUG								
03...	1300	10000	40	5820	95	--	10	.3
31...	1130	3800	194	38400	99	9.9	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
NOV										
06...	1200	2	3	100	60	40	1	0	2	0
FEB										
02...	1045	1	1	100	50	50	0	0	1	10
MAY										
05...	1230	1	1	0	0	40	0	--	<1	20
AUG										
03...	1300	3	3	100	50	50	0	0	14	10

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV										
06...	0	0	2	<3	7	3	4	1200	1100	80
FEB										
02...	10	0	0	<3	7	3	4	550	470	80
MAY										
05...	20	0	1	<3	8	4	4	2200	2200	40
AUG										
03...	0	10	1	<3	4	0	4	1100	1100	14

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
NOV 06...	4	1	3	100	90	6	.2	.2	.0
FEB 02...	10	10	0	90	30	60	.3	.2	.1
MAY 05...	7	7	0	230	230	3	.4	.4	.0
AUG 03...	6	2	4	150	140	11	.1	.1	.0

DATE	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 06...	11	5	6	0	0	0	50	40	10
FEB 02...	5	4	1	0	0	0	50	0	50
MAY 05...	6	6	0	0	0	0	20	0	20
AUG 03...	4	3	1	0	0	0	100	70	34

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE	OCT 7,80	MAR 5,81	MAY 5,81	JUN 1,81
TIME	1200	1200	1230	1200
TOTAL CELLS/ML	7000	9800	23000	22000
DIVERSITY: DIVISION	1.3	0.6	0.3	1.4
.CLASS	1.3	0.6	0.3	1.4
..ORDER	2.0	1.4	0.8	2.0
...FAMILY	2.2	1.7	1.0	2.3
....GENUS	2.9	2.6	1.6	2.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...MICRACTINIACEAE								
....GOLENKINIA	*	0	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	300	1	500	2
...OOCYSTACEAE								
....ANKISTRODESMUS	67	1	82	1	150	1	--	-
....CHODATELLA	--	-	--	-	--	-	*	0
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	130	1
....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....OOCYSTIS	120	2	--	-	--	-	130	1
....QUADRIGULA	--	-	--	-	--	-	--	-
....SELENASTRUM	50	1	--	-	300	1	270	1
....TETRAEDRON	*	0	--	-	--	-	*	0
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	540	2
....CRUCIGENIA	67	1	--	-	--	-	--	-
....SCENEDESMUS	270	4	160	2	600	3	1500	7
....TETRASTRUM	--	-	--	-	--	-	270	1
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	*	0	--	-	--	-	--	-
...PALMELLACEAE								
....SPHAEROCYSTIS	130	2	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	50	1	330	3	150	1	170	1
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	470	7	5000*	51	--	-	1000	5
....MELOSIRA	1200*	17	650	7	3400	15	4800*	22
....STEPHANODISCUS	--	-	1200	13	16000*	71	400	2
..PENNALES								
...DIATOMACEAE								
....DIATOMA	--	-	820	8	450	2	130	1
...FRAGILARIACEAE								
....ASTERIONELLA	100	1	160	2	--	-	--	-
....SYNEDRA	--	-	82	1	750	3	*	0
...NAVICULACEAE								
....CALONEIS	--	-	82	1	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-	--	-
....NAVICULA	--	-	240	2	450	2	--	-
...NITZSCHIACEAE								
....NITZSCHIA	*	0	570	6	300	1	170	1
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	2400*	35	--	-	--	-	3000	14
....COCCOCHLORIS	850	12	--	-	--	-	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....APHANIZOMENON	--	-	--	-	--	-	500	2
...OSCILLATORIACEAE								
....OSCILLATORIA	1000	14	--	-	--	-	8200*	37
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....PHACUS	*	0	--	-	--	-	--	-
....TRACHELOMONAS	--	-	240	2	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	160	2	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE	JUL 7,81	AUG 3,81	AUG 31,81
TIME	1200	1300	1130
TOTAL CELLS/ML	23000	10000	3800
DIVERSITY: DIVISION	1.5	1.1	1.2
.CLASS	1.5	1.1	1.2
..ORDER	2.2	1.8	1.7
...FAMILY	2.6	2.0	1.7
....GENUS	3.4	2.3	1.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	310	1	120	1	--	-
....MICRACTINIUM	160	1	--	-	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	190	1	*	0	--	-
....CLOSTERIOPSIS	--	-	*	0	--	-
....DICTYOSPHAERIUM	510	2	260	3	--	-
....KIRCHNERIELLA	160	1	--	-	--	-
....OOCYSTIS	310	1	87	1	--	-
....QUADRIGULA	230	1	--	-	--	-
....TETRAEDRON	*	0	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	1900	8	--	-	--	-
....SCENEDESMUS	1200	5	390	4	470	12
....TETRASTRUM	620	3	*	0	--	-
..TETRASPORALES						
...COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	--	-	--	-
...PALMELLACEAE						
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	270	1	--	-	--	-
...VOLVOCACEAE						
....PANDORINA	620	3	--	-	--	-
..ZYGNEMATALES						
...DESMIDIACEAE						
....COSMARIUM	--	-	*	0	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	1800	8	510	5	350	9
....MELOSIRA	1900	8	1100	11	180	5
..PENNALES						
...ACHNANTHACEAE						
....COCCONEIS	*	0	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	*	0	*	0	--	-
...NAVICULACEAE						
....GYROSIGMA	--	-	*	0	--	-
....NAVICULA	--	-	72	1	58	2
...NITZSCHIACEAE						
....NITZSCHIA	120	1	*	0	180	5
...SURIRELLACEAE						
....SURIRELLA	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	1600	7	2400*	23	--	-
....ANACYSTIS	7200*	31	--	-	230	6
....GOMPHOSPHAERIA	--	-	140	1	--	-
..HORMOGONALES						
...NOSTOCACEAE						
....APHANIZOMENON	3700*	16	5100*	50	--	-
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	2300*	62
....OSCILLATORIA	230	1	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	*	0	--	-
....PHACUS	--	-	--	-	--	-
....TRACHELOMONAS	120	1	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05420560 WAPSIPINICON RIVER NEAR ELMA, IA

LOCATION.--Lat 43°14'34", long 92°31'48", in NW1/4 NW1/4 sec.6, T.97 N., R.14 W., Howard County, Hydrologic Unit 07080102, on right bank 10 ft (3 m) downstream from bridge on county highway B17, 0.2 mi (0.3 km) downstream from small left-bank tributary, 4.8 mi (7.7 km) west of Elma, and at mile 217.9 (350.6 km).

DRAINAGE AREA.--95.2 mi^2 (247 km^2).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,130.05 ft (344.439 m) NGVD.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 5-25, Jan. 30 to Feb. 16 and winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 60.5 ft^3/s (1.713 m^3/s), 8.63 in/yr (219 mm/yr), 43,830 acre-ft/yr (54.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft^3/s (286 m^3/s) June 4, 1974, gage height, 14.94 ft (4.554 m), from high-water mark in well; maximum gage height, 15.38 ft (4.688 m), from high-water mark in well, probably occurred Aug. 22, 1979 (backwater from vegetation); minimum daily discharge, 1.9 ft^3/s (0.054 m^3/s Feb. 4-8, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 638 ft^3/s (18.1 m^3/s) June 13, gage height 10.66 ft (3.249 m) at 1100 hours, no other peak above base of 600 ft^3/s (17.0 m^3/s); minimum daily, 9.3 ft^3/s (0.26 m^3/s) Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	57	25	18	13	184	49	157	40	32	38	183
2	78	53	15	18	12	172	45	104	37	28	336	120
3	73	51	22	16	11	110	49	85	35	25	182	90
4	70	49	27	15	11	69	214	88	33	24	98	73
5	66	46	29	14	10	46	160	129	29	33	75	61
6	61	45	31	14	10	52	97	109	27	24	65	53
7	59	45	34	13	10	42	79	83	24	20	55	60
8	58	44	31	13	10	35	80	70	24	18	48	58
9	55	42	27	12	10	34	74	62	24	18	40	53
10	54	40	22	12	9.8	40	64	55	25	16	34	45
11	52	38	19	12	9.6	65	64	49	23	52	30	40
12	52	37	27	12	9.4	51	64	45	22	352	27	34
13	51	37	25	12	9.3	61	61	50	351	271	24	30
14	51	39	22	12	9.6	59	81	54	103	88	28	26
15	49	39	22	12	11	46	47	49	105	237	123	23
16	56	35	21	12	20	45	44	44	85	316	86	21
17	107	35	20	12	30	40	46	40	67	121	51	21
18	90	34	19	12	46	34	43	36	55	91	41	20
19	74	33	15	12	47	29	43	34	46	77	34	20
20	67	33	18	12	44	26	55	31	40	188	28	19
21	62	33	18	12	41	25	49	29	36	120	24	18
22	59	32	18	12	38	24	49	28	32	85	22	19
23	58	32	18	12	48	24	71	35	36	75	21	17
24	185	29	18	13	41	24	64	253	89	78	21	17
25	184	28	16	14	56	24	55	214	78	65	20	18
26	128	27	16	14	64	26	47	95	59	55	92	27
27	99	29	16	15	68	27	45	78	47	46	475	48
28	85	29	16	15	259	27	158	67	40	54	212	29
29	74	29	16	14	---	34	57	61	37	51	205	25
30	67	28	17	13	---	49	222	52	35	43	199	23
31	62	---	18	13	---	62	---	45	---	36	177	---
TOTAL	2369	1128	658	412	957.7	1566	2266	2331	1684	2739	2911	1281
MEAN	76.4	37.6	21.2	13.3	34.2	50.5	75.5	75.2	56.1	88.4	93.9	42.7
MAX	185	57	34	18	259	184	222	253	351	352	475	183
MIN	49	27	15	12	9.3	24	43	28	22	16	20	17
CFSM	.80	.40	.22	.14	.36	.53	.79	.79	.59	.93	.99	.45
IN.	.93	.44	.26	.16	.37	.61	.89	.91	.66	1.07	1.14	.50
AC-FT	4700	2240	1310	817	1900	3110	4490	4620	3340	5430	5770	2540

CAL YR 1980 TOTAL 35363.8 MEAN 96.6 MAX 3320 MIN 8.0 CFSM 1.02 IN 13.82 AC-FT 70140
WTR YR 1981 TOTAL 20302.7 MEAN 55.6 MAX 475 MIN 9.3 CFSM .58 IN 7.93 AC-FT 40270

05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA

LOCATION.--Lat 42°27'49", long 91°53'42", in SE1/4 sec.4, T.88 N., R.9 W., Buchanan County, Hydrologic Unit 07080102, on right bank at Sixth Street in Independence, 1,800 ft (549 m) downstream from dam at abandoned hydroelectric plant, 4.9 mi (7.9 km) downstream from Otter Creek, 9.7 mi (15.6 km) upstream from Pine Creek, and at mile 142.5 (229.3 km).

DRAINAGE AREA.--1,048 mi² (2,714 km²).

PERIOD OF RECORD.--July 1933 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1938-39, 1940 (M), 1947.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 882.85 ft (269.093 m) NGVD. Prior to May 24, 1941, nonrecording gage in tailrace of powerplant 1,800 ft (549 m) upstream at datum 80.00 ft (24.38 m) lower.

REMARKS.--Records excellent. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--48 years, 593 ft³/s (16.79 m³/s), 7.68 in/yr (195 mm/yr), 429,600 acre-ft/yr (530 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft³/s (759 m³/s) July 18, 1968, gage height, 21.11 ft (6.434 m); minimum daily, 7.0 ft³/s (0.20 m³/s) for several days in 1934 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, that of July 18, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 25	1030	4,000	113	8.27	2.521	Sept. 2	0730	*8,020	227	*11.37	3.466

Minimum daily discharge, 79 ft³/s (2.24 m³/s) Feb. 11,12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1090	806	348	171	98	1550	448	1450	663	1330	731	7270
2	935	732	286	162	95	1350	429	1400	580	1050	801	7720
3	827	700	217	150	93	1090	439	1370	513	887	1410	6300
4	764	654	252	146	91	1000	559	1350	460	781	1440	5070
5	706	612	309	133	88	948	981	1310	423	682	1630	3900
6	660	582	369	128	86	804	1460	1140	379	603	1830	2870
7	614	561	400	120	84	650	1630	1040	331	522	2020	2030
8	571	547	429	117	83	540	1610	1020	312	466	1900	1460
9	532	522	388	115	81	481	1560	992	225	420	1680	1210
10	512	484	353	109	80	449	1420	898	210	372	1320	1080
11	457	457	247	108	79	424	1250	796	279	333	984	960
12	426	434	299	105	79	409	1370	717	289	313	766	840
13	404	442	325	104	81	404	1620	665	367	295	675	744
14	401	457	320	102	84	405	1770	608	1040	324	648	609
15	379	526	326	100	92	450	1840	567	1850	696	720	583
16	393	531	350	100	127	442	1840	533	2210	924	758	531
17	450	502	324	100	214	432	1830	495	2210	757	687	480
18	536	479	298	102	318	427	1850	463	2040	726	608	447
19	567	444	165	102	403	397	1660	432	1870	727	568	414
20	569	437	170	106	380	373	1380	400	1700	717	515	399
21	560	426	180	107	446	358	1200	363	1330	756	445	375
22	529	425	189	108	764	347	1110	343	1380	931	386	345
23	506	426	188	110	975	330	1120	326	1150	984	346	330
24	548	392	165	113	771	320	1200	345	2030	988	327	316
25	726	356	155	121	868	317	1210	808	3770	1050	287	762
26	940	323	152	129	1040	338	1140	764	3240	961	309	2400
27	1060	365	150	133	1080	328	1030	716	3020	764	323	3510
28	1090	348	154	125	1430	346	1110	761	2750	758	430	2210
29	1070	353	163	120	---	361	1260	783	2590	777	699	1650
30	990	350	169	115	---	403	1400	691	2050	770	900	1370
31	883	---	173	107	---	436	---	648	---	787	3350	---
TOTAL	20695	14673	8013	3668	10110	16909	38726	24194	41261	22451	29493	58185
MEAN	668	489	258	118	361	545	1291	780	1375	724	951	1940
MAX	1090	806	429	171	1430	1550	1850	1450	3770	1330	3350	7720
MIN	379	323	150	100	79	317	429	326	210	295	287	316
CFSM	.64	.47	.25	.11	.34	.52	1.23	.74	1.31	.69	.91	1.85
IN.	.73	.52	.28	.13	.36	.60	1.37	.86	1.46	.80	1.05	2.07
AC-FT	41050	29100	15890	7280	20050	33540	76810	47990	81840	44530	58500	115400

CAL YR 1980 TOTAL 304292 MEAN 831 MAX 7210 MIN 98 CFSM .79 IN 10.80 AC-FT 603600
WTR YR 1981 TOTAL 288378 MEAN 790 MAX 7720 MIN 79 CFSM .75 IN 10.24 AC-FT 572000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	319	314	191	208	286	1,340	1,240	748	901	754	353	276	579
RUNOFF (INCHES)	0.35	0.33	0.21	0.23	0.28	1.47	1.32	0.82	0.96	0.83	0.39	0.29	7.50
STD. DEVIATION	0.40	0.38	0.18	0.30	0.25	0.93	1.14	0.55	0.95	1.08	0.41	0.31	3.72
PERCENT OF ANNUAL	4.7	4.4	2.8	3.1	3.7	20	18	11	13	11	5.2	3.9	----
PRECIP. (INCHES)	2.2	1.5	1.2	0.9	0.8	2.1	2.8	3.9	5.2	3.7	3.5	3.8	31.6

WAPSIPINICON RIVER BASIN

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW1/4 NE1/4 sec.6, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft (2 m) upstream from bridge on U.S. Highway 61, 0.9 mi (1.4 km) downstream from Silver Creek, 4.0 mi (6.4 km) south of water tower in De Witt, 6.2 mi (10.0 km) upstream from Brophy Creek, and 18.2 mi (29.3 km) upstream from mouth.

DRAINAGE AREA.--2,330 mi² (6,034 km²).

PERIOD OF RECORD.--June 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage recorder. Datum of gage is 598.81 ft (182.517 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--47 years, 1,477 ft³/s (41.83 m³/s), 8.61 in/yr (219 mm/yr), 1,070,000 acre-ft/yr (1,319 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s (847 m³/s) May 17, 1974, gage height, 13.07 ft (3.984 m); minimum daily, 46 ft³/s (1.30 m³/s) Jan. 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Aug. 15	1415	*13,400	379	*11.92	3.633
Sept. 8	1900	7,170	203	11.61	3.539
Sept. 28	0415	6,480	184	10.55	3.216

Minimum daily discharge, 310 ft³/s (8.78 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2030	1460	801	880	510	2220	840	2120	1130	4520	1260	2230
2	2130	1440	797	820	485	2200	845	2140	1130	3870	1220	3830
3	2030	1380	725	720	445	2260	860	2220	1080	3450	1220	4700
4	1720	1320	702	610	420	2290	874	2260	1040	2670	1540	5600
5	1520	1250	690	540	415	2140	913	2240	1030	2140	2170	6210
6	1400	1200	730	500	400	1930	940	2180	976	1840	3210	6670
7	1320	1170	880	475	377	1770	954	2100	910	1620	3620	7000
8	1250	1130	1270	445	358	1670	1080	2030	860	1460	4270	7110
9	1180	1100	1700	418	333	1560	1440	1920	816	1350	4560	6960
10	1120	1060	1530	405	318	1450	1830	1810	789	1250	3730	6740
11	1060	1020	1350	409	310	1350	2200	1720	762	1160	3230	5540
12	1010	1000	1210	420	325	1270	2550	1660	731	1110	2840	3550
13	964	979	1090	435	360	1220	2950	1600	757	1120	2370	2830
14	934	967	1010	438	410	1180	3200	1530	2620	1020	2690	2420
15	899	957	981	425	460	1140	3290	1500	1530	982	10700	2120
16	876	936	983	405	550	1120	3160	1400	3560	952	10000	1900
17	893	921	962	400	695	1100	3180	1320	5140	1010	8950	1690
18	893	918	965	410	775	1080	3130	1250	3620	1030	4030	1570
19	876	930	800	430	725	1060	3060	1180	3230	1170	2800	1480
20	876	933	930	475	795	1050	2980	1130	3030	1210	2270	1400
21	888	919	1060	500	965	1070	2930	1090	2850	1220	1910	1320
22	922	903	1150	520	1150	1090	2830	1050	2710	1190	1650	1250
23	940	888	1190	560	2810	1070	2530	1020	2480	1110	1500	1190
24	988	887	1020	625	2800	1020	2320	1000	2460	1090	1380	1140
25	1100	868	970	660	2210	980	2150	1080	3120	1160	1300	1290
26	1110	845	795	640	2070	940	2050	968	3290	1920	1240	2920
27	1090	843	800	610	1910	910	2030	930	3740	1650	1220	5440
28	1130	835	860	575	2050	890	2030	944	4160	1530	2710	6020
29	1260	819	895	560	---	870	2100	1110	4380	1570	3050	5320
30	1380	806	905	535	---	850	2210	1120	4940	1420	1900	5920
31	1450	---	900	525	---	840	---	1120	---	1320	1680	---
TOTAL	37239	30684	30651	16370	25431	41590	63456	46742	68871	50114	96220	113360
MEAN	1201	1023	989	528	908	1342	2115	1508	2296	1617	3104	3779
MAX	2130	1460	1700	880	2810	2290	3290	2260	5140	4520	10700	7110
MIN	876	806	690	400	310	840	840	930	731	952	1220	1140
CFSM	.52	.44	.42	.23	.39	.58	.91	.65	.99	.69	1.33	1.62
IN.	.59	.49	.49	.26	.41	.66	1.01	.75	1.10	.80	1.54	1.81
AC-FT	73860	60850	60800	32470	50440	82490	125900	92710	136600	99400	190900	224800

CAL YR 1980 TOTAL 603358 MEAN 1649 MAX 8240 MIN 471 CFSM .71 IN 9.63 AC-FT 1197000
WTR YR 1981 TOTAL 620728 MEAN 1701 MAX 10700 MIN 310 CFSM .73 IN 9.91 AC-FT 1231000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	795	976	606	847	1,040	2,640	2,890	1,940	2,240	1,630	887	814	1,440
RUNOFF (INCHES)	0.39	0.47	0.30	0.42	0.46	1.31	1.38	0.96	1.07	0.81	0.44	0.39	8.39
STD. DEVIATION	0.37	0.59	0.22	0.44	0.29	0.76	1.01	0.65	0.93	0.84	0.37	0.36	3.93
PERCENT OF ANNUAL	4.6	5.6	3.6	5.0	5.5	16	16	11	13	9.7	5.2	4.6	----
PRECIP. (INCHES)	2.3	2.0	1.7	1.5	1.1	2.3	3.3	3.5	4.2	3.7	3.8	3.5	32.7

05422000 WAPSIPINICON RIVER NEAR DEWITT, IA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
APR							
14...	1500	--	3180	560	4800	31	38
JUN							
17...	1400	21.5	4890	1680	22200	65	71
SEP							
04...	1130	19.0	5450	330	4830	27	30

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
APR							
14...	67	88	90	91	94	100	--
JUN							
17...	75	82	90	95	97	97	100
SEP							
04...	--	41	71	82	99	100	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
APR											
14...	1250	2790	7	0	1	4	41	87	95	98	100
JUN											
17...	1400	4890	6	--	0	4	48	90	97	99	100
SEP											
04...	1045	5450	6	--	0	4	48	88	96	99	100

05422420 CROW CREEK AT ELDRIDGE, IA

LOCATION.--Lat 41°38'24", long 90°33'07", in SE1/4 SE1/4 sec.13, T.79 N., R.3 E., Scott County, Hydrologic Unit 07080101, on left bank 10 ft (3 m) upstream from culvert on county highway 1.0 mi (1.6 km) south and 1.2 mi (1.9 km) east of Eldridge.

DRAINAGE AREA.--2.20 mi² (5.70 km²).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 741.22 ft (225.924 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 531 ft³/s (15.0 m³/s) Aug. 20, 1979, gage height, 12.63 ft (3.850 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 153 ft³/s (4.33 m³/s) Sept. 26, gage height, 9.57 ft (2.917 m) at 1030 hours, no other peak above base of 100 ft³/s (2.83 m³/s); no flow Oct 19-23, Aug 1,4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	.03	.27	.70	.26	.79	.23	2.2	.67	.96	.00	5.0
2	.30	.04	.10	.64	.23	.67	.23	2.0	.67	.96	.06	3.9
3	.30	.16	.03	.50	.20	.67	.24	1.6	.65	.93	.02	3.6
4	.30	.27	.06	.45	.18	.55	.29	1.4	.55	1.6	.00	3.0
5	.23	.23	.23	.42	.17	.55	.41	1.2	.55	.98	4.1	2.6
6	.37	.25	.57	.38	.16	.45	.41	1.2	.55	1.0	2.2	2.2
7	.45	.05	4.1	.36	.16	.40	.39	1.2	.55	1.1	.80	3.6
8	.45	.02	8.1	.33	.14	.55	.37	1.2	.64	.94	.45	3.6
9	.37	.03	4.9	.31	.12	.72	.64	1.2	.74	.70	.30	2.6
10	.37	.03	3.5	.30	.11	.67	1.8	1.1	.70	.45	.18	2.0
11	.37	.05	2.7	.29	.30	.94	4.7	.93	.55	.25	.06	1.6
12	.30	.13	2.4	.51	7.0	1.1	6.5	.67	.45	.33	.03	1.4
13	.11	.18	2.0	.42	22	.96	3.5	.80	2.4	.43	.02	1.4
14	.10	.18	1.7	.34	1.7	.62	4.1	1.6	.67	2.0	13	1.2
15	.02	.18	1.6	.27	4.5	.46	4.0	1.8	2.2	.97	15	.80
16	.06	.24	1.4	.34	8.9	.25	3.1	1.1	1.6	.95	6.2	.67
17	.03	.42	1.4	.48	4.5	.25	2.5	1.1	1.2	.18	4.4	.67
18	.02	.45	1.2	.40	2.6	.07	1.9	1.1	.80	.06	3.6	.67
19	.00	.45	.97	.36	1.5	.11	1.9	.93	.65	.06	2.8	.67
20	.00	.40	.78	.40	1.2	.33	1.6	.93	.61	.10	2.2	.67
21	.00	.31	.64	.31	1.1	.30	1.4	.93	.67	.06	1.6	.67
22	.00	.12	.70	.29	2.7	.57	1.6	.93	.61	.03	1.2	.55
23	.00	.20	.84	.35	2.9	.37	1.5	3.6	.48	.02	.93	.55
24	.12	.12	.73	.44	1.5	.30	1.2	5.0	5.1	.02	.80	.67
25	.18	.04	.65	.50	.80	.51	1.1	1.1	2.7	.67	1.1	3.6
26	.03	.10	.60	.44	.67	.30	1.1	.80	1.2	1.6	.80	55
27	.05	.21	.57	.30	.67	.23	1.0	.93	1.0	.67	5.0	13
28	.18	.16	.57	.23	.67	.23	1.4	.80	.93	1.1	27	9.3
29	.07	.12	.64	.22	---	.24	1.8	.80	1.8	.45	10	9.0
30	.03	.09	.70	.26	---	.23	2.8	.67	1.5	.30	6.9	7.2
31	.06	---	.74	.31	---	.23	---	.67	---	.02	5.6	---
TOTAL	5.32	5.26	45.39	11.85	66.94	14.62	53.71	41.49	33.39	19.89	116.35	141.39
MEAN	.17	.18	1.46	.38	2.39	.47	1.79	1.34	1.11	.64	3.75	4.71
MAX	.45	.45	8.1	.70	22	1.1	6.5	5.0	5.1	2.0	27	55
MIN	.00	.02	.03	.22	.11	.07	.23	.67	.45	.02	.00	.55
CFSM	.08	.08	.66	.17	1.09	.21	.81	.61	.51	.29	1.71	2.14
IN.	.09	.09	.77	.20	1.13	.25	.91	.70	.56	.34	1.97	2.39
AC-FT	11	10	90	24	133	29	107	82	66	39	231	280

CAL YR 1980 TOTAL 534.20 MEAN 1.46 MAX 11 MIN .00 CFSM .66 IN 9.03 AC-FT 1060
WTR YR 1981 TOTAL 555.60 MEAN 1.52 MAX 55 MIN .00 CFSM .69 IN 9.39 AC-FT 1100

05422450 CROW CREEK AT MT. JOY, IA

LOCATION.--Lat 41°36'54", long 90°32'57", in NW1/4 SW1/4 sec.30, T.79 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 10 ft (3 m) downstream from bridge on county highway, 1.0 mi (1.6 km) east of Mt. Joy.

DRAINAGE AREA.--6.90 mi^2 (17.87 km^2).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 695.57 ft (212.010 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,150 ft^3/s (60.9 m^3/s) Aug. 20, 1979, gage height, 16.47 ft (5.020 m); minimum, 0.06 ft^3/s (0.002 m^3/s) Sept. 4, 8, 27, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 24	0245	282	7.99	10.57	3.222	Aug. 14	1045	326	9.23	10.90	3.322
June 29	1830	221	6.26	10.06	3.066	Aug. 14	2245	520	14.7	12.07	3.679
July 26	1400	242	6.85	10.25	3.124	Aug. 28	----	280	7.93	unknown	
Aug. 5	1030	*686	19.4	*12.86	3.920	Sept.26	----	490	13.9	unknown	
Aug. 5	1430	314	8.89	10.81	3.295						

Minimum daily discharge, 0.30 ft^3/s (0.008 m^3/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	.66	.90	1.8	.70	3.6	1.9	4.8	1.8	3.7	1.1	20
2	1.4	.66	.86	1.7	.59	3.2	1.9	4.4	1.8	3.3	3.8	10
3	1.4	.76	.76	1.5	.54	3.0	2.1	3.9	1.8	2.8	1.5	6.0
4	1.2	.66	1.2	1.3	.48	3.3	2.4	4.9	1.7	6.3	1.1	4.8
5	1.2	.50	1.5	1.3	.43	2.8	2.0	3.9	1.7	1.8	59	3.8
6	1.1	.76	7.6	1.2	.42	2.7	2.3	3.5	1.7	1.6	10	3.4
7	.76	.76	21	1.1	.41	2.4	2.8	3.4	1.6	1.5	5.1	9.0
8	1.0	1.0	24	.98	.40	2.5	3.5	3.2	1.8	1.2	3.7	6.0
9	.87	.87	9.3	.90	.36	2.3	3.2	3.7	1.8	1.4	2.8	3.9
10	.76	.76	6.7	.84	.33	2.0	6.5	3.3	1.4	1.2	2.4	3.2
11	.76	.76	5.4	.81	.30	2.0	14	3.0	1.3	1.2	2.2	2.8
12	.76	1.2	3.9	1.3	.31	2.1	28	2.9	1.2	1.1	1.6	2.4
13	.66	1.2	3.7	2.0	.68	2.0	12	5.6	12	1.3	1.4	2.1
14	.76	1.0	3.4	1.2	5.0	2.0	11	9.6	1.8	18	97	1.9
15	.76	.66	3.6	.74	7.0	2.0	8.1	3.4	7.2	3.1	59	1.8
16	2.0	.76	3.3	.72	4.0	1.8	7.5	3.2	2.5	1.7	14	1.7
17	.87	.76	3.1	1.2	5.6	2.0	6.4	2.9	2.0	1.7	10	1.6
18	.76	.66	2.9	1.9	3.2	1.9	5.7	2.8	1.4	.87	7.8	1.7
19	1.1	.76	2.7	1.5	1.8	1.9	6.3	2.7	1.2	1.3	6.0	1.7
20	.76	.76	2.5	1.1	1.4	1.8	5.1	2.7	1.1	1.8	4.8	1.6
21	.66	.76	2.3	.89	2.1	1.9	4.8	2.7	4.2	1.7	3.8	1.5
22	.50	1.0	2.1	1.0	23	1.8	6.6	2.7	1.3	1.2	3.3	1.5
23	.57	2.0	2.3	.76	9.6	1.9	4.8	12	1.1	1.2	2.8	1.4
24	2.8	1.1	1.9	.81	5.3	1.8	4.2	3.4	35	1.1	3.5	1.5
25	.87	.76	1.7	.91	3.8	1.8	3.8	2.8	4.9	5.4	2.5	17
26	.66	.66	1.5	.71	3.2	2.0	3.7	2.9	3.9	20	4.1	143
27	1.5	1.1	1.4	.65	6.2	2.5	3.7	2.2	3.4	5.1	18	62
28	2.7	1.0	1.5	.60	4.3	2.0	5.8	2.4	3.9	5.2	105	35
29	1.3	.87	1.6	.55	---	2.9	6.0	2.1	23	1.7	35	29
30	1.2	.87	1.8	.60	---	2.2	4.1	2.0	5.3	1.4	20	24
31	.66	---	1.9	.65	---	2.1	---	1.8	---	1.1	13	---
TOTAL	33.80	26.03	128.32	33.22	91.45	70.2	180.2	114.8	134.8	101.97	505.3	405.3
MEAN	1.09	.87	4.14	1.07	3.27	2.26	6.01	3.70	4.49	3.29	16.3	13.5
MAX	2.8	2.0	24	2.0	23	3.6	28	12	35	20	105	143
MIN	.50	.50	.76	.55	.30	1.8	1.9	1.8	1.1	.87	1.1	1.4
CFSM	.16	.13	.60	.16	.47	.33	.87	.54	.65	.48	2.36	1.96
IN.	.18	.14	.69	.18	.49	.38	.97	.62	.73	.55	2.72	2.18
AC-FT	67	52	255	66	181	139	357	228	267	202	1000	804

CAL YR 1980 TOTAL 1577.06 MEAN 4.31 MAX 46 MIN .50 CFSM .63 IN 8.50 AC-FT 3130
WTR YR 1981 TOTAL 1828.39 MEAN 5.00 MAX 143 MIN .30 CFSM .73 IN 9.84 AC-FT 3620

05422470 CROW CREEK AT BETTENDORF, IA

LOCATION.--Lat 41°33'03", long 90°27'15", in NW1/4 NW1/4 sec.24, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 200 ft (61 m) upstream from bridge on Valley Road (old U.S. Highway 67), 3.5 mi (5.6 km) east of U.S. Highway 6, and 0.7 mi (1.1 km) upstream from mouth.

DRAINAGE AREA.--17.8 mi² (46.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 576.23 ft (175.635 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,460 ft³/s (69.7 m³/s) Aug. 26, 1979, gage height, 10.20 ft (3.109 m); minimum, 0.23 ft³/s (0.007 m³/s) Sept. 10, 11, 26-28, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 29	2145	255	7.22	5.12	1.561	Aug. 26	2300	354	10.0	5.47	1.667
Aug. 5	1700	293	8.30	5.25	1.600	Aug. 28	0315	306	8.67	5.28	1.609
Aug. 15	0130	281	7.96	5.19	1.582	Sept.26	1130	*544	15.4	*6.15	1.875

Minimum daily discharge, 1.4 ft³/s (0.040 m³/s) Feb. 11,12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.2	3.8	5.5	4.0	14	4.9	10	4.4	7.2	8.3	42
2	3.3	3.3	4.0	5.2	2.7	11	4.7	8.5	4.4	6.1	24	17
3	3.3	4.3	3.8	4.9	2.4	10	4.9	8.1	4.4	5.6	16	12
4	3.3	4.7	3.7	4.6	2.2	11	5.2	9.5	4.1	13	8.4	10
5	3.1	4.4	4.3	4.4	2.0	9.3	4.4	8.9	4.6	5.5	103	8.3
6	3.2	4.9	10	4.3	1.9	10	3.9	7.3	4.0	4.6	29	7.0
7	3.2	5.5	68	4.2	1.8	9.4	4.6	6.9	3.7	4.3	8.6	17
8	3.1	5.3	107	4.1	1.7	6.9	5.1	7.6	4.0	4.0	6.5	12
9	3.0	6.1	47	4.0	1.7	6.5	6.2	7.0	3.8	3.5	5.1	8.0
10	3.1	5.3	25	3.9	1.8	6.2	8.0	6.9	4.1	3.4	4.3	7.1
11	2.8	5.0	18	3.9	1.4	6.4	26	6.3	3.2	3.3	3.9	5.8
12	3.0	6.1	16	5.4	1.4	6.1	64	6.0	3.3	3.2	3.7	4.9
13	2.9	6.0	14	7.4	1.9	6.2	39	6.1	21	3.0	4.2	4.4
14	3.2	5.2	12	5.6	5.0	6.1	40	17	5.5	25	82	4.2
15	3.2	3.4	11	4.3	11	6.3	23	10	11	4.7	110	4.1
16	4.6	3.1	10	3.9	24	6.8	22	6.6	5.2	3.5	34	3.8
17	4.7	3.1	9.5	4.9	20	5.8	17	6.2	4.2	3.1	21	3.6
18	3.0	3.4	8.7	7.0	12	5.2	13	5.7	3.8	2.8	15	3.6
19	3.0	3.3	8.1	6.3	6.4	5.4	14	5.6	3.5	2.8	11	3.7
20	3.6	3.4	7.7	5.2	5.1	5.6	12	5.4	3.2	3.1	8.4	3.4
21	2.8	3.6	7.3	4.5	5.1	5.1	12	5.3	3.4	2.8	7.4	3.4
22	2.8	3.8	7.1	4.1	71	5.2	13	5.2	7.4	2.7	6.6	3.1
23	2.6	5.3	7.0	4.1	48	4.9	16	19	3.3	2.5	6.1	3.3
24	5.6	4.3	6.4	4.3	20	4.9	11	11	64	2.3	5.7	4.4
25	3.8	10	7.3	4.4	13	5.1	10	6.7	9.4	4.0	7.1	30
26	2.8	4.0	6.8	4.3	11	5.4	9.3	6.3	6.2	31	38	254
27	3.0	8.8	6.1	3.5	21	5.4	8.8	6.9	5.3	13	45	100
28	5.7	3.9	5.5	3.4	17	5.5	13	5.3	4.6	16	133	69
29	4.7	3.8	5.2	3.7	---	6.6	10	5.5	47	12	68	65
30	3.4	3.7	5.6	3.4	---	6.1	14	4.8	32	13	35	52
31	3.7	---	5.9	3.5	---	5.3	---	4.6	---	10	26	---
TOTAL	108.0	139.5	463.8	142.2	313.2	212.9	438.0	236.1	289.0	221.0	881.3	765.8
MEAN	3.48	4.65	15.0	4.59	11.2	6.87	14.6	7.62	9.63	7.13	28.4	25.5
MAX	5.6	10	107	7.4	71	14	64	19	64	31	133	254
MIN	2.6	3.1	3.7	3.4	1.4	4.9	3.9	4.6	3.2	2.3	3.7	3.1
CFSM	.20	.26	.84	.26	.63	.39	.82	.43	.54	.40	1.60	1.43
IN.	.23	.29	.97	.30	.65	.44	.92	.49	.60	.46	1.84	1.60
AC-FT	214	277	920	282	621	422	869	468	573	438	1750	1520

CAL YR 1980 TOTAL 4231.3 MEAN 11.6 MAX 107 MIN 2.6 CFSM .65 IN 8.84 AC-FT 8390
WTR YR 1981 TOTAL 4210.8 MEAN 11.5 MAX 254 MIN 1.4 CFSM .65 IN 8.80 AC-FT 8350

05422470 CROW CREEK AT BENTENDORF, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1978 to current year.
WATER TEMPERATURES: April 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 1,300 micromhos Feb. 26, 1979; minimum daily, 220 micromhos Aug. 27, 1979.
WATER TEMPERATURES: Maximum daily, 34.0°C Aug. 5, 1979; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,480 mg/L Aug. 20, 1979; minimum daily mean, 4 mg/L Feb. 5, 1981.
SEDIMENT LOADS: Maximum daily, 18,300 tons (16,600 tonnes) Aug. 20, 1979; minimum daily, 0.02 tons (0.018 tonnes) Aug. 7, Sept. 28-30, 1978, Feb. 5, 1981.

EXTREMES FOR CURRENT PERIOD:
SPECIFIC CONDUCTANCE: Maximum daily, 680 micromhos Sept. 29; minimum daily, 260 micromhos July 14.
WATER TEMPERATURES: Maximum daily, 31.5°C July 12; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,930 mg/L July 14; minimum daily mean, 4 mg/L Feb. 5.
SEDIMENT LOADS: Maximum daily, 1,380 tons (1,250 tonnes) Aug. 5; minimum daily, 0.02 tons (0.018 tonnes) Feb. 5.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	500	490	490	520	570	520	520	480	550	480	500
2	480	520	470	480	500	580	520	520	470	520	560	570
3	480	490	500	580	520	580	580	500	470	480	500	540
4	480	490	500	580	520	570	540	510	470	510	480	520
5	480	480	500	610	530	560	530	500	480	540	310	520
6	470	490	480	570	530	580	500	520	470	500	530	530
7	480	490	450	540	510	560	500	530	480	510	520	560
8	480	490	580	520	560	560	540	530	470	500	510	520
9	470	490	580	530	560	560	510	510	480	500	510	590
10	470	480	520	540	520	600	520	520	480	490	500	590
11	470	470	500	530	520	600	420	500	480	510	490	580
12	480	480	520	540	530	520	460	520	470	500	480	550
13	500	480	500	500	530	520	600	520	300	550	490	540
14	480	480	510	510	500	550	520	520	520	260	380	560
15	500	480	540	520	630	520	620	430	550	460	560	570
16	520	470	510	520	540	590	500	540	500	560	580	520
17	500	470	510	540	540	530	500	530	510	530	560	530
18	560	480	520	510	500	520	500	530	510	510	550	520
19	540	480	520	500	500	520	500	540	480	500	540	510
20	530	480	540	490	540	520	480	520	500	520	530	520
21	510	480	540	480	510	520	500	520	480	470	530	540
22	520	480	510	500	450	520	500	510	440	480	520	545
23	500	480	510	510	610	540	510	520	350	480	510	540
24	520	480	510	480	620	530	490	530	330	450	480	510
25	540	480	520	470	580	580	470	550	550	470	510	580
26	560	490	510	470	590	570	470	500	530	290	520	410
27	530	450	480	470	620	520	500	470	510	410	360	630
28	520	460	500	480	610	540	510	470	520	450	280	640
29	610	480	480	500	---	530	480	470	500	520	540	680
30	500	480	470	520	---	560	520	470	460	490	580	640
31	510	---	470	510	---	510	---	470	---	490	590	---

05422470 CROW CREEK AT BETTENDORF, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	6.0	3.5	.0	.0	.0	8.5	12.0	24.0	20.5	28.0	19.5
2	11.5	5.0	.0	.0	.0	.0	7.5	9.5	24.5	22.0	22.5	18.0
3	12.0	9.5	.0	.0	.0	5.0	12.5	20.0	21.5	26.0	23.0	18.0
4	12.0	10.0	.0	.0	.0	2.0	10.5	15.0	21.5	24.5	26.5	21.0
5	8.0	8.5	11.0	.0	.0	4.0	12.0	15.0	20.5	23.0	23.0	20.0
6	15.0	8.5	4.0	.0	.0	5.0	8.5	18.5	24.5	23.0	23.0	18.0
7	13.0	9.0	8.0	.0	.0	5.5	21.5	8.0	23.0	23.5	21.5	18.0
8	11.5	7.5	.0	.0	.0	4.0	12.5	10.5	26.5	24.0	24.5	16.0
9	17.5	10.0	.0	.0	.0	1.0	8.0	16.0	21.0	24.0	23.5	16.5
10	11.0	8.0	.0	.0	.0	2.0	11.5	9.0	26.5	29.0	23.0	16.5
11	10.0	9.0	.0	.0	.0	2.0	15.0	6.5	21.0	22.5	27.5	17.0
12	10.0	9.5	1.5	.0	.0	12.0	12.5	10.0	26.0	31.5	21.5	25.0
13	11.0	10.5	1.5	.0	.0	8.0	14.0	11.5	26.5	27.0	24.0	18.0
14	10.0	6.0	3.0	.0	.0	5.0	12.0	9.5	23.0	23.5	22.5	18.0
15	12.0	4.5	1.5	.0	.0	11.0	10.5	10.0	24.0	25.0	22.0	17.5
16	15.0	1.5	2.0	.0	1.0	2.5	9.5	13.5	24.0	23.0	20.0	16.5
17	11.0	1.0	3.5	.0	2.0	3.5	18.0	14.0	25.0	23.5	21.5	12.0
18	9.5	1.5	1.0	.0	.0	1.5	11.5	10.5	25.5	27.5	20.5	16.0
19	8.0	2.0	.0	.0	.0	4.0	12.0	9.0	26.5	26.5	19.5	15.0
20	9.5	4.0	.0	.0	.0	6.0	5.5	10.0	20.5	28.0	21.5	19.0
21	13.5	4.5	.0	.0	4.0	5.0	7.0	13.0	22.0	24.0	22.0	15.0
22	13.0	5.0	.0	.0	5.0	8.5	10.5	10.5	25.5	23.0	19.5	14.5
23	14.0	2.0	.0	.0	4.0	3.0	10.0	17.5	23.5	24.0	21.0	13.0
24	11.0	1.5	.0	.0	6.0	4.5	8.5	21.5	21.0	25.5	22.0	14.0
25	8.0	.0	.0	.0	8.0	8.5	14.0	18.5	26.0	23.5	25.0	13.0
26	5.0	.0	.0	.0	5.0	7.5	15.5	17.0	23.5	22.0	20.5	13.5
27	6.0	2.0	.0	.0	9.0	5.5	14.5	25.5	22.5	19.0	20.5	12.5
28	5.5	2.0	.0	.0	5.0	8.0	14.5	26.0	22.5	16.0	20.5	13.5
29	5.0	5.0	.0	.0	---	15.5	12.0	26.5	26.0	18.5	20.5	13.5
30	6.0	7.0	.0	.0	---	10.5	14.0	19.5	27.5	21.5	22.0	13.5
31	6.5	---	.0	.0	---	18.5	---	26.0	---	22.0	20.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	69	.65	28	.24	25	.26	51	.76	15	.16	62	2.3
2	72	.64	24	.21	28	.30	50	.70	14	.10	58	1.7
3	53	.47	26	[illegible]	32	.33	33	.44	19	.12	40	1.1
4	42	.37	23	.25	37	.37	34	.42	12	.07	58	1.7
5	64	.54	22	.26	44	.51	41	.49	4	.02	43	1.1
6	31	.27	60	.79	82	2.2	38	.44	5	.03	25	.58
7	32	.28	52	.77	377	69	31	.35	10	.05	24	.61
8	40	.33	50	.72	177	51	35	.39	9	.04	32	.60
9	19	.15	35	.58	92	12	31	.33	7	.03	29	.51
10	43	.36	28	.40	54	3.6	32	.34	13	.05	39	.65
11	36	.27	14	.19	40	1.9	30	.32	28	.11	30	.52
12	35	.28	8	.13	51	2.2	28	.41	32	.12	18	.30
13	45	.35	16	.26	35	1.3	21	.42	29	.15	23	.39
14	73	.63	38	.53	33	1.1	22	.33	21	.28	53	.87
15	75	.65	34	.31	47	1.4	25	.29	100	3.0	38	.65
16	78	.97	37	.31	36	.97	35	.37	132	8.6	39	.53
17	85	1.1	42	.35	29	.74	51	.87	152	8.2	45	.70
18	64	.52	32	.29	29	.68	19	.36	105	3.4	37	.52
19	71	.58	89	.79	46	1.0	10	.17	65	.95	34	.50
20	62	.60	53	.49	44	.91	8	.11	43	.59	22	.33
21	51	.39	33	.31	44	.87	7	.09	53	.73	26	.36
22	51	.39	30	.28	38	.73	15	.17	1250	240	32	.45
23	40	.28	119	1.7	48	.91	12	.13	460	56	31	.41
24	65	1.2	126	1.5	42	.95	9	.10	86	4.8	24	.32
25	58	.60	53	1.4	38	.75	8	.10	47	1.6	38	.52
26	45	.34	48	.52	38	.70	7	.08	35	1.0	43	.63
27	62	.50	40	.95	22	.36	11	.10	62	3.5	40	.58
28	78	1.2	44	.46	27	.40	12	.11	58	2.7	38	.56
29	62	.79	19	.18	24	.34	23	.23	---	---	37	.66
30	61	.56	22	.22	12	.18	11	.10	---	---	43	.71
31	62	.52	---	---	7	.11	7	.07	---	---	42	.60
TOTAL	---	16.78	---	15.73	---	158.07	---	9.39	---	336.20	---	22.16

05422470 CROW CREEK AT BETTENDORF, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	58	.77	86	1.8	75	.89	256	5.0	49	1.1	412	47
2	53	.67	99	2.3	50	.59	160	2.6	398	26	220	10
3	64	.71	82	1.8	37	.44	115	1.7	141	6.1	153	5.0
4	46	.65	111	2.8	39	.43	189	6.6	69	1.6	95	2.6
5	31	.37	85	2.0	114	1.4	119	1.8	2680	1380	78	1.7
6	47	.49	57	1.1	124	1.3	123	1.5	480	38	86	1.6
7	34	.42	81	1.5	91	.91	92	1.1	166	3.9	163	7.5
8	26	.35	93	1.9	90	.97	104	1.1	169	3.0	175	5.7
9	27	.45	77	1.5	127	1.3	71	.67	95	1.3	101	2.2
10	86	1.9	90	1.7	141	1.6	29	.27	65	.75	83	1.6
11	800	54	57	.97	146	1.3	37	.33	67	.71	64	.95
12	1260	218	85	1.4	114	1.0	23	.20	70	.70	45	.60
13	408	43	125	2.1	1850	188	40	.32	68	.77	69	.82
14	502	54	244	11	350	5.2	2930	585	1220	270	75	.85
15	122	7.6	217	5.9	840	25	210	2.7	940	279	73	.81
16	175	10	67	1.2	420	7.0	144	1.4	314	29	78	.80
17	119	5.5	61	1.0	263	3.0	65	.54	178	10	75	.73
18	107	3.8	84	1.3	237	2.4	35	.26	125	5.1	49	.48
19	117	4.4	72	1.1	215	2.0	20	.15	119	3.5	39	.39
20	87	2.8	63	.92	168	1.5	30	.25	121	2.7	25	.23
21	64	2.1	77	1.1	143	1.3	64	.48	86	1.7	45	.41
22	105	3.7	72	1.0	248	5.0	76	.55	61	1.1	47	.39
23	89	3.8	233	12	144	1.3	64	.43	40	.66	40	.36
24	60	1.8	329	9.8	2210	575	1100	92	34	.52	58	.69
25	46	1.2	126	2.3	360	9.1	195	2.1	97	1.9	104	8.4
26	43	1.1	128	2.2	256	4.5	1000	84	478	283	576	574
27	60	1.4	101	1.9	220	3.1	532	19	780	95	230	62
28	57	2.4	72	1.0	192	2.4	355	15	2250	808	197	37
29	60	1.6	54	.80	1050	471	139	4.5	840	147	187	33
30	89	3.4	71	.92	1090	389	106	3.7	287	27	190	27
31	---	---	52	.65	---	---	58	1.6	244	17	---	---
TOTAL	---	432.39	---	78.96	---	1707.93	---	836.86	---	3446.11	---	834.81

TOTAL LOAD FOR YEAR: 7895.38 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JUN										
13...	1547	26.5	24	3060	198	70	77	93	97	100
JUL										
14...	0748	23.5	56	5490	830	56	62	80	93	100
AUG										
05...	1137	23.0	190	3760	1930	50	54	66	89	100

05448150 PINE CREEK NEAR MUSCATINE, IA

LOCATION.--Lat 41°28'03", long 90°52'04", in SE1/4 SE1/4 sec.17, T.77 N., R.1 E., Muscatine County, Hydrologic Unit 07080101, on right bank 4 ft (1 m) downstream of Old Pine Creek Mill at Wildcat Den State Park, 1.5 miles (2.4 km) upstream from mouth, and 9.8 miles (15.8 km) northeast of Muscatine.

DRAINAGE AREA.--38.9 mi² (100.8 km²).

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 551.84 ft (168.201 m) NGVD. Prior to July 28, 1978 at site 20 ft (6 m) upstream in pool of mill dam.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 18.9 ft³/s (0.535 m³/s), 6.60 in/yr (168 mm/yr), 13,690 acre-ft/yr (16.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,550 ft³/s (129 m³/s) July 20, 1976, gage height, 16.22 ft (4.944 m), from rating curve extended above 218 ft³/s (6.17 m³/s), on basis of indirect measurement of peak flow over dam of 3,670 ft³/s (104 m³/s), gage height, 15.80 ft (4.816 m) Mar. 4, 1976; no flow Jan. 11-16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 29	1845	*3,440	97.4	*10.30	3.139	Sept. 26	1020	2,400	68.0	9.53	2.905

Minimum daily discharge, 1.4 ft³/s (0.040 m³/s) Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	7.4	4.7	8.0	2.2	25	8.5	16	3.8	17	3.5	12
2	2.1	7.2	4.9	6.4	2.1	23	7.2	14	3.9	15	9.7	8.1
3	2.0	7.1	3.9	5.7	2.0	21	6.5	13	4.1	13	14	6.9
4	2.1	7.6	6.0	3.9	1.9	19	14	13	3.5	28	7.8	6.3
5	2.2	7.4	6.9	3.2	1.9	16	9.2	14	3.1	17	43	6.2
6	2.3	7.1	8.5	2.9	1.9	14	8.3	12	2.8	12	27	5.5
7	2.2	6.9	25	3.0	2.0	13	7.4	10	2.6	10	19	6.4
8	2.1	7.9	44	3.3	1.9	13	7.9	10	2.8	8.8	16	11
9	2.0	10	27	3.5	1.8	12	8.4	9.7	3.0	8.0	13	7.4
10	1.9	11	22	3.1	1.8	12	15	9.6	2.7	7.4	11	6.1
11	1.9	10	19	2.9	1.9	12	160	7.2	2.5	10	9.8	3.5
12	2.2	7.2	18	2.8	2.1	11	60	4.5	2.3	8.4	9.3	2.4
13	2.3	5.0	16	2.7	3.2	11	120	5.7	10	7.0	8.3	2.4
14	2.5	5.2	15	2.8	4.0	10	70	10	5.0	8.0	20	2.4
15	2.4	5.0	14	3.0	5.3	9.8	50	11	46	18	19	2.2
16	2.9	4.8	14	3.3	6.4	10	42	7.8	10	11	14	1.9
17	5.8	5.1	13	3.0	40	8.6	36	6.8	4.1	8.4	9.4	1.6
18	4.1	5.4	11	2.8	25	9.0	31	7.5	3.9	7.0	7.0	1.6
19	3.4	4.7	6.4	2.8	18	8.3	28	7.7	2.8	5.6	6.5	1.6
20	3.1	5.1	5.6	3.1	14	8.0	25	7.4	2.0	4.5	5.7	1.6
21	3.0	4.3	5.4	3.8	11	8.1	23	7.9	2.0	3.8	5.3	1.6
22	2.9	3.7	5.6	4.1	11	7.8	25	8.1	4.3	3.3	4.5	1.6
23	2.8	5.5	7.0	5.0	70	7.4	20	12	3.3	2.8	4.0	1.4
24	7.1	5.9	8.6	4.8	48	7.6	19	14	38	2.5	4.1	1.8
25	8.3	3.4	7.0	5.2	80	7.5	18	13	20	3.0	3.7	18
26	5.3	3.5	6.2	5.4	47	7.4	17	14	15	17	3.5	110
27	4.6	5.5	6.0	4.6	35	7.2	17	17	12	17	12	41
28	10	5.4	6.8	3.8	29	7.2	17	13	10	16	25	31
29	10	5.2	8.0	2.2	---	9.1	18	8.4	103	12	20	28
30	8.3	5.0	8.6	2.0	---	10	17	5.6	29	8.0	11	25
31	7.9	---	8.5	2.1	---	11	---	4.4	---	6.4	8.9	---
TOTAL	121.9	184.5	362.6	114.9	470.4	356.0	905.4	314.3	357.5	315.9	375.0	356.5
MEAN	3.93	6.15	11.7	3.71	16.8	11.5	30.2	10.1	11.9	10.2	12.1	11.9
MAX	10	11	44	8.0	80	25	160	17	103	28	43	110
MIN	1.9	3.4	3.9	2.0	1.8	7.2	6.5	4.4	2.0	2.5	3.5	1.4
CFSM	.10	.16	.30	.10	.43	.30	.78	.26	.31	.26	.31	.31
IN.	.12	.18	.35	.11	.45	.34	.87	.30	.34	.30	.36	.34
AC-FT	242	366	719	228	933	706	1800	623	709	627	744	707

CAL YR 1980 TOTAL 3566.6 MEAN 9.74 MAX 44 MIN 1.3 CFSM .25 IN 3.41 AC-FT 7070
WTR YR 1981 TOTAL 4234.9 MEAN 11.6 MAX 160 MIN 1.4 CFSM .30 IN 4.05 AC-FT 8400

05449000 EAST BRANCH IOWA RIVER NEAR KLEMME, IA

LOCATION.--Lat 43°00'31", long 93°37'42", in NE1/4 NW1/4 sec.36, T.95 N., R.24 W., Hancock County, Hydrologic Unit 07080207, on left bank 15 ft (5 m) upstream from bridge on county highway B55, 1.2 mi (1.9 km) west of Chicago, Rock Island and Pacific Railroad crossing in Klemme, 1.5 mi (2.4 km) upstream from Drainage ditch 9, 18.2 mi (29.3 km) upstream from confluence with West Branch Iowa River.

DRAINAGE AREA.--133 mi^2 (344 km^2).

PERIOD OF RECORD.--April 1948 to September 1976, June 1977 to current year. Prior to October 1958, published as East Fork Iowa River near Klemme.

REVISED RECORDS.--WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,179.33 ft (359.46 m) NGVD. Apr. 1, 1948, to Sept. 30, 1955, nonrecording gage at site 0.6 mi (1.0 km) upstream at datum 0.80 ft (0.24 m) higher. Oct. 1, 1955, to Sept. 30, 1969, at present site at datum 0.31 ft (0.09 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 59.3 ft^3/s (1.679 m^3/s), 6.05 in/yr (154 mm/yr), 42,960 acre-ft/yr (53.0 hm^3/yr); median of yearly mean discharges, 48 ft^3/s (1.36 m^3/s), 4.9 in/yr (124 mm/yr), 34,800 acre-ft/yr (42.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,960 ft^3/s (169 m^3/s) June 19, 1954, gage height, 11.2 ft (3.41 m), from floodmark, site and datum then in use; maximum gage height, 10.67 ft (3.252 m) Sept. 6, 1965, backwater from ice; minimum daily discharge, 0.2 ft^3/s (0.006 m^3/s) Feb. 22-26, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1944 reached a stage of about 10 ft (3 m), from information by local residents, former site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)	Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)
June 25	0600	*918	26.0	*8.85	2.697	July 24	0645	720	20.4	8.20	2.499

Minimum daily discharge, 10 ft^3/s (0.28 m^3/s) Feb. 6-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	69	26	29	12	17	47	32	71	181	143	88
2	80	70	24	27	12	20	42	30	64	135	203	76
3	74	67	26	26	12	25	44	33	58	110	164	65
4	70	58	31	26	11	25	67	55	54	99	125	58
5	66	58	34	25	11	24	74	77	49	85	164	51
6	62	54	36	26	10	22	66	77	45	72	278	47
7	58	54	37	23	10	25	65	58	43	62	199	55
8	58	53	35	22	10	19	68	62	44	57	139	53
9	55	50	35	21	10	24	60	56	43	49	109	48
10	52	48	34	20	10	33	55	48	42	44	93	45
11	50	47	34	20	10	25	50	46	37	42	78	39
12	48	44	35	21	10	26	48	44	45	39	68	34
13	46	42	35	22	11	24	45	46	200	36	59	33
14	48	43	33	22	14	17	45	42	229	34	81	31
15	44	42	33	22	24	20	33	40	172	291	90	27
16	56	41	29	21	80	17	36	38	136	359	74	26
17	85	41	28	21	131	23	38	36	100	233	64	26
18	81	39	28	22	124	21	34	36	84	137	56	25
19	72	41	27	22	58	22	38	31	70	97	49	24
20	66	40	27	22	44	19	36	30	64	187	43	24
21	63	35	26	22	33	19	35	29	56	192	39	23
22	64	37	28	22	25	15	44	30	57	117	35	22
23	71	35	29	23	22	15	50	64	68	396	32	21
24	121	32	28	23	19	16	49	348	627	704	36	21
25	129	29	26	23	22	19	48	323	896	616	31	29
26	110	29	28	19	18	21	46	191	735	471	33	27
27	103	33	30	15	27	20	43	132	557	339	57	23
28	91	33	31	15	20	20	42	112	404	279	110	22
29	85	31	31	14	---	30	33	109	295	234	192	22
30	79	28	31	13	---	39	36	91	238	183	161	23
31	71	---	32	13	---	47	---	76	---	145	112	---
TOTAL	2243	1323	947	662	800	709	1423	2422	5583	6025	3117	1108
MEAN	72.4	44.1	30.5	21.4	28.6	22.9	47.4	78.1	186	194	101	36.9
MAX	129	70	37	29	131	47	74	348	896	704	278	88
MIN	44	28	24	13	10	15	33	29	37	34	31	21
CFSM	.54	.33	.23	.16	.22	.17	.36	.59	1.40	1.46	.76	.28
IN.	.63	.37	.26	.19	.22	.20	.40	.68	1.56	1.69	.87	.31
AC-FT	4450	2620	1880	1310	1590	1410	2820	4800	11070	11950	6180	2200

CAL YR 1980 TOTAL 23166.2 MEAN 63.3 MAX 733 MIN 8.4 CFSM .48 IN 6.48 AC-FT 45950
WTR YR 1981 TOTAL 26362.0 MEAN 72.2 MAX 896 MIN 10 CFSM .54 IN 7.37 AC-FT 52290

05449500 IOWA RIVER NEAR ROWAN, IA

LOCATION.--Lat 42°45'36", long 93°37'23", in NW1/4 NE1/4 sec.25, T.92 N., R.24 W., Wright County, Hydrologic Unit 07080207, on left bank 10 ft (3 m) downstream from bridge on county highway C38, 0.9 mi (1.4 km) downstream from Drainage ditch 123, 3.8 mi (6.1 km) northwest of Rowan, 10.7 mi (17.2 km) downstream from confluence of East and West Branches, and at mile 316.4 (509.1 km).

DRAINAGE AREA.--429 mi^2 (1,111 km^2).

PERIOD OF RECORD.--October 1940 to September 1976, June 1977 to current year.

REVISED RECORDS.--WSP 1308: 1942-43 (M). WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,143.35 ft (348.49 m) NGVD. Prior to Oct. 14, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years, 196 ft^3/s (5.551 m^3/s), 6.20 in/yr (157 mm/yr), 142,000 acre-ft/yr (175 hm^3/yr); median of yearly mean discharges, 190 ft^3/s (5.38 m^3/s), 6.0 in/yr (152 mm/yr), 138,000 acre-ft/yr (170 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft^3/s (240 m^3/s) June 21, 1954, gage height, 14.88 ft (4.535 m); minimum daily, 2.9 ft^3/s (0.082 m^3/s) Jan. 21-23,1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft^3/s (34.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 27	0130	*2,270	64.3	*11.17	3.405	July 26	1530	1,910	54.1	10.59	3.228

Minimum daily discharge, 27 ft^3/s (0.76 m^3/s) Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	219	96	75	37	74	117	116	194	972	707	419
2	285	207	80	70	35	63	123	109	184	683	885	344
3	261	199	82	66	34	57	125	102	171	501	979	284
4	245	192	102	63	32	61	299	129	156	417	862	241
5	231	179	110	60	30	68	357	179	141	364	702	209
6	215	172	118	57	29	64	300	227	130	307	736	183
7	205	173	118	55	28	63	247	223	120	262	753	172
8	197	173	116	54	28	66	230	204	114	228	629	174
9	192	161	114	50	28	66	216	188	116	203	470	168
10	179	152	102	48	28	65	194	172	119	182	380	155
11	177	140	108	48	28	72	183	153	114	164	324	145
12	170	135	97	50	27	68	211	144	107	152	280	132
13	167	137	100	51	28	67	204	146	294	140	247	120
14	164	139	98	52	33	66	177	144	579	128	232	113
15	161	132	94	52	40	60	161	136	709	379	247	107
16	171	131	91	51	180	61	145	129	690	786	255	102
17	231	129	88	51	250	60	145	122	505	890	229	97
18	282	126	77	51	225	60	141	118	353	750	205	95
19	272	122	75	51	170	61	131	112	275	615	187	93
20	245	122	72	51	130	59	130	107	227	435	170	91
21	225	124	72	51	98	61	126	102	205	557	156	87
22	210	117	70	51	78	62	127	99	196	567	145	84
23	205	115	72	50	66	59	143	110	200	822	136	81
24	268	115	73	51	74	58	158	272	1130	1480	131	80
25	368	94	72	50	80	59	156	556	1980	1740	140	89
26	383	94	71	50	72	61	148	576	2190	1870	145	94
27	339	110	72	48	68	66	143	431	2250	1850	153	94
28	303	102	73	45	73	65	133	307	2010	1710	203	90
29	270	102	74	43	---	73	129	280	1700	1460	307	84
30	244	98	74	41	---	88	123	260	1320	1160	463	83
31	234	---	74	39	---	105	---	223	---	885	470	---
TOTAL	7409	4211	2735	1625	2029	2038	5222	6176	18479	22659	11928	4310
MEAN	239	140	88.2	52.4	72.5	65.7	174	199	616	731	385	144
MAX	383	219	118	75	250	105	357	576	2250	1870	979	419
MIN	161	94	70	39	27	57	117	99	107	128	131	80
CFSM	.56	.33	.21	.12	.17	.15	.41	.46	1.44	1.70	.90	.34
IN.	.64	.37	.24	.14	.18	.18	.45	.54	1.60	1.96	1.03	.37
AC-FT	14700	8350	5420	3220	4020	4040	10360	12250	36650	44940	23660	8550

CAL YR 1980 TOTAL 79856 MEAN 218 MAX 1340 MIN 36 CFSM .51 IN 6.92 AC-FT 158400
WTR YR 1981 TOTAL 88821 MEAN 243 MAX 2250 MIN 27 CFSM .57 IN 7.70 AC-FT 176200

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	95	78	51	40	74	328	415	242	376	254	97	127	182
RUNOFF (INCHES)	0.26	0.20	0.14	0.11	0.18	0.88	1.08	0.65	0.98	0.68	0.26	0.33	5.76
STD. DEVIATION	0.38	0.27	0.16	0.10	0.22	0.64	1.39	0.47	1.01	0.86	0.33	0.67	3.65
PERCENT OF ANNUAL	4.5	3.5	2.4	1.9	3.1	15	19	11	17	12	4.5	5.7	----
PRECIP. (INCHES)	1.8	1.2	1.4	1.0	1.0	2.1	2.6	4.2	5.0	4.0	3.1	3.1	30.4

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84 N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from bridge on State Highway 14, 1,500 ft (457 km) upstream from Burnett Creek, 2.2 mi (3.5 km) upstream from Linn Creek and at mile 222.8 (358.5 km).

DRAINAGE AREA.--1,564 mi² (4,050 km²), including that of Burnett Creek.

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1858: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1936, 1938, 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 853.10 ft (260.205 m) NGVD. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--63 years (1902-3, 1914-27, 1932-81), 770 ft³/s (21.81 m³/s), 6.69 in/yr (170 mm/yr), 557,900 acre-ft/yr (688 hm³/yr); median of yearly mean discharges, 690 ft³/s (19.5 m³/s), 6.0 in/yr (152 mm/yr), 500,000 acre-ft/yr (616 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,000 ft³/s (1,190 m³/s) June 4, 1918, gage height, 17.74 ft (5.407 m), from floodmark, from rating curve extended above 19,000 ft³/s (538 m³/s) on basis of velocity-area study; maximum gage height, 19.77 ft (6.026 m) March 19, 1979; minimum daily discharge, 4.7 ft³/s (0.13 m³/s) Jan. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,150 ft³/s (118 m³/s) June 25, gage height 14.15 ft (4.313 m), no peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 60 ft³/s (1.70 m³/s) Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	560	416	190	85	66	542	206	312	382	2740	1980	616
2	487	394	180	89	60	505	207	306	362	2330	1870	683
3	443	382	180	74	62	443	221	303	333	1910	1930	742
4	433	367	170	70	66	433	395	297	305	1600	1550	688
5	413	351	160	70	72	426	528	294	296	1250	1400	584
6	397	340	180	70	74	402	469	288	293	966	1340	498
7	384	333	170	70	84	403	556	306	269	797	1260	545
8	366	321	170	70	90	185	549	328	296	706	1120	491
9	347	312	160	71	100	211	504	356	318	644	1020	421
10	332	307	160	72	120	210	474	362	321	594	942	406
11	314	304	130	72	130	205	611	348	328	541	821	384
12	310	295	130	74	150	207	718	330	291	505	712	358
13	300	294	125	76	160	211	639	320	289	467	622	318
14	301	296	120	75	180	209	593	307	278	438	631	307
15	286	290	130	75	210	210	553	294	377	795	587	284
16	295	284	120	74	240	203	502	285	1030	778	536	260
17	314	283	110	70	340	202	470	271	1070	641	497	250
18	309	275	115	71	460	193	427	263	900	804	464	240
19	311	272	120	73	500	187	399	252	819	892	450	229
20	346	271	110	80	541	186	377	239	672	983	420	218
21	374	273	105	82	439	182	352	230	576	978	379	210
22	371	270	96	82	428	173	352	222	501	920	364	200
23	359	271	82	80	433	164	413	233	523	988	346	191
24	390	259	88	76	437	164	371	241	2600	1140	333	197
25	392	257	100	84	499	165	348	257	3870	1240	326	232
26	372	250	95	88	501	166	339	267	3250	1360	330	286
27	410	280	88	86	592	161	337	411	3080	1550	424	329
28	461	230	80	84	615	158	325	515	2930	1900	512	341
29	471	230	70	84	---	170	321	536	2970	1820	476	320
30	454	190	74	76	---	194	315	477	2950	2330	512	303
31	436	---	80	68	---	208	---	411	---	2240	556	---
TOTAL	11738	8897	3888	2371	7649	7678	12867	9861	32479	36547	24710	11131
MEAN	379	297	125	76.5	273	248	429	318	1083	1179	797	371
MAX	560	416	190	89	615	542	718	536	3870	2740	1980	742
MIN	286	190	70	68	60	158	206	222	269	438	326	191
CFSM	.24	.19	.08	.05	.18	.16	.27	.20	.69	.75	.51	.24
IN.	.28	.21	.09	.06	.18	.18	.31	.23	.77	.87	.59	.26
AC-FT	23280	17650	7710	4700	15170	15230	25520	19560	64420	72490	49010	22080

CAL YR 1980 TOTAL 225725 MEAN 617 MAX 5180 MIN 70 CFSM .40 IN 5.37 AC-FT 447700
WTR YR 1981 TOTAL 169816 MEAN 465 MAX 3870 MIN 60 CFSM .30 IN 4.04 AC-FT 336800

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	381	327	220	258	486	1,480	1,440	1,100	1,600	1,040	426	424	765
RUNOFF (INCHES)	0.28	0.23	0.16	0.19	0.32	1.09	1.03	0.81	1.14	0.77	0.31	0.30	6.64
STD. DEVIATION	0.35	0.28	0.15	0.20	0.27	0.76	1.06	0.65	1.06	0.95	0.26	0.40	3.48
PERCENT OF ANNUAL	4.2	3.5	2.4	2.9	4.8	16	16	12	17	12	4.7	4.5	----
PRECIP. (INCHES)	2.1	1.3	1.1	1.0	1.0	2.3	2.9	4.3	4.8	3.6	3.4	3.2	31.0

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'25", long 92°51'15", in SE1/4 SW1/4 sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft (6 m) downstream from bridge on U.S. Highway 30, 3.5 mi (5.6 km) upstream from mouth, and 4.1 mi (6.6 km) southeast of court house in Marshalltown.

DRAINAGE AREA.--118 mi² (306 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1957-59.

GAGE.--Water-stage recorder. Datum of gage is 849.44 ft (258.909 m) NGVD.

REMARKS.--Records excellent except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 66.6 ft³/s (1.886 m³/s), 7.66 in/yr (195 mm/yr), 48,250 acre-ft/yr (59.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Aug. 16, 1977, gage height, 17.69 ft (5.392 m), no flow for a few days in 1956 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft (5.12 m), discharge, 5,700 ft³/s (161 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 510 ft³/s (14.4 m³/s) Feb. 26, gage height, 6.85 ft (2.088 m), no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 1.1 ft³/s (0.031 m³/s) Sept. 15-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	7.8	6.0	6.2	3.9	48	8.5	11	3.9	15	11	6.0
2	4.4	7.0	2.7	5.4	3.6	37	7.5	9.9	20	13	13	5.0
3	4.1	7.5	3.2	4.7	4.5	31	7.9	9.9	14	12	13	3.8
4	6.0	8.9	3.7	3.7	6.4	33	15	9.6	5.5	14	11	3.3
5	6.8	7.3	5.0	3.4	7.2	26	14	10	4.0	13	9.7	3.3
6	8.4	7.2	11	3.8	5.4	22	9.9	9.8	3.2	10	8.3	3.3
7	4.2	8.1	11	2.6	3.9	21	9.1	8.0	2.6	8.0	7.7	8.0
8	5.5	8.4	10	2.5	7.0	20	9.5	8.1	2.9	6.7	7.7	9.3
9	7.9	11	8.4	2.4	8.6	20	10	9.4	4.5	5.8	6.8	6.0
10	7.0	7.5	4.9	2.4	8.4	18	10	8.6	4.4	6.8	6.5	3.8
11	5.7	9.1	4.4	2.3	5.6	18	74	8.1	4.7	6.6	5.2	3.1
12	6.0	11	4.4	2.2	4.2	16	67	7.9	3.3	6.5	5.0	2.5
13	7.7	13	3.8	2.1	3.7	15	34	9.2	3.4	6.0	5.0	2.0
14	8.3	14	4.2	1.9	5.4	14	42	9.8	3.5	5.4	5.8	1.5
15	12	12	4.1	2.1	11	14	31	9.1	45	13	30	1.1
16	9.7	11	4.2	4.5	25	13	27	7.4	31	7.1	12	1.1
17	15	8.4	4.7	5.0	64	13	27	6.7	11	6.5	7.4	1.1
18	9.5	8.3	4.0	3.7	52	12	21	8.1	8.1	6.5	6.0	1.1
19	6.9	8.6	2.6	3.4	42	11	19	8.7	6.9	6.4	4.7	1.1
20	6.0	8.8	1.6	3.8	33	11	19	7.4	6.0	5.9	4.7	2.9
21	4.9	9.0	1.5	5.2	28	11	16	7.1	5.5	3.2	4.7	2.0
22	4.8	9.2	1.9	6.0	35	11	17	6.3	5.8	3.1	4.7	2.0
23	13	9.0	2.4	5.4	75	9.8	24	9.6	5.7	17	4.1	2.1
24	23	8.6	2.6	5.8	95	9.9	20	11	297	6.5	3.8	4.0
25	24	7.9	2.0	7.2	184	10	18	8.6	58	65	4.4	16
26	14	7.6	1.9	7.0	239	11	17	7.9	32	141	6.3	23
27	12	7.4	2.3	7.8	189	11	14	6.2	25	22	16	19
28	14	6.8	2.7	7.2	77	10	13	5.4	23	28	19	5.4
29	13	7.4	3.3	4.1	---	12	13	5.5	18	22	19	4.4
30	12	7.8	5.5	3.1	---	14	12	5.2	17	16	13	5.4
31	10	---	6.7	3.8	---	12	---	4.5	---	13	7.7	---
TOTAL	291.4	265.6	136.7	130.7	1226.8	534.7	626.4	254.0	674.9	511.0	283.2	152.6
MEAN	9.40	8.85	4.41	4.22	43.8	17.2	20.9	8.19	22.5	16.5	9.14	5.09
MAX	24	14	11	7.8	239	48	74	11	297	141	30	23
MIN	4.1	6.8	1.5	1.9	3.6	9.8	7.5	4.5	2.6	3.1	3.8	1.1
CFSM	.08	.08	.04	.04	.37	.15	.18	.07	.19	.14	.08	.04
IN.	.09	.08	.04	.04	.39	.17	.20	.08	.21	.16	.09	.05
AC-FT	578	527	271	259	2430	1060	1240	504	1340	1010	562	303

CAL YR 1980 TOTAL 12055.5 MEAN 32.9 MAX 1000 MIN 1.5 CFSM .28 IN 3.80 AC-FT 23910
WTR YR 1981 TOTAL 5088.0 MEAN 13.9 MAX 297 MIN 1.1 CFSM .12 IN 1.60 AC-FT 10090

05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE1/4 NE1/4 sec.21, T.82 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft (2 m) upstream from bridge on county highway, 0.6 mi (1.0 km) northeast of Haven, and 2.8 mi (4.5 km) upstream from mouth.

DRAINAGE AREA.--56.1 mi^2 (145 km^2).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage recorder. Datum of gage is 788.69 ft (240.393 m) NGVD. Prior to Oct. 1, 1971, at datum 10 ft (3.05 m) higher.

REMARKS.--Records excellent except those for winter period, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 33.3 ft^3/s (0.943 m^3/s), 8.06 in/yr (205 mm/yr), 24,130 acre-ft/yr (29.8 hm^3/yr); median of yearly mean discharges, 30 ft^3/s (0.85 m^3/s), 7.3 in/yr (185 mm/yr), 21,700 acre-ft/yr (26.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft^3/s (198 m^3/s) May 28, 1974, gage height, 24.00 ft (7.315 m); no flow Jan. 22 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft (7.41 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 983 ft^3/s (27.8 m^3/s) Aug. 27, gage height, 16.52 ft (5.035 m), no peak above base of 1,000 ft^3/s (28.3 m^3/s); minimum daily, 0.76 ft^3/s (0.022 m^3/s) Jan. 3.

DISCHARGE, IN CUBIC FEEGT PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	2.6	1.1	1.1	2.4	25	4.2	6.7	2.1	8.0	4.3	18
2	3.5	2.5	.95	1.0	2.7	18	4.2	6.4	2.2	6.3	22	15
3	3.5	2.7	1.4	.76	3.1	17	4.3	6.3	2.4	6.0	18	13
4	3.5	2.7	2.0	1.3	3.3	16	7.8	5.6	2.4	7.2	7.8	11
5	3.8	2.5	2.9	1.8	3.7	14	5.5	5.9	2.1	6.0	6.3	9.9
6	3.1	2.4	4.1	1.4	3.3	13	4.6	5.2	1.9	5.0	6.0	9.0
7	3.1	2.5	3.9	1.1	2.5	12	4.5	4.9	2.1	4.9	5.2	20
8	2.9	2.4	5.7	1.5	3.6	11	5.4	4.9	2.7	4.6	5.2	16
9	2.8	2.2	2.8	1.5	4.2	11	5.3	4.9	2.5	4.1	4.0	9.6
10	2.3	2.0	2.1	1.7	4.3	10	9.3	4.9	2.5	3.7	3.4	8.1
11	2.1	2.0	1.6	1.5	4.2	10	61	4.3	2.1	3.8	3.1	7.0
12	2.0	2.0	1.3	1.4	8.4	9.6	15	4.2	2.1	3.7	2.5	6.1
13	2.7	2.6	1.1	1.3	11	8.9	54	4.3	2.1	3.1	2.4	5.9
14	2.4	3.5	.93	1.4	12	8.4	68	4.8	2.0	2.9	55	5.6
15	2.5	2.1	.88	1.5	17	9.0	22	4.5	9.2	20	42	5.1
16	3.8	1.5	.84	1.9	31	7.8	18	3.6	12	7.6	9.1	4.8
17	4.1	1.2	.82	1.8	32	7.8	16	3.5	4.7	5.0	5.3	4.5
18	2.7	1.0	.79	1.7	26	6.7	14	3.8	3.6	4.7	3.8	4.5
19	2.3	.85	.90	1.7	21	6.4	13	3.5	3.1	4.9	3.2	4.9
20	2.3	1.2	.96	1.8	18	6.4	13	3.0	2.7	4.4	2.5	4.7
21	2.0	1.2	.90	1.9	16	6.9	11	2.8	2.4	3.6	2.5	4.1
22	1.8	1.5	.80	2.1	29	6.3	14	3.0	2.5	3.2	2.0	3.6
23	1.7	1.9	.89	2.0	40	5.3	13	4.3	7.9	21	2.0	3.5
24	6.4	1.0	.90	2.0	65	5.7	11	3.6	280	7.7	16	4.4
25	4.5	.95	.83	2.1	166	5.6	9.4	3.5	31	74	4.7	18
26	2.6	.85	.78	2.0	186	5.6	9.0	3.0	20	22	53	116
27	2.8	1.0	1.0	1.9	111	5.1	7.9	2.8	16	12	155	25
28	3.5	1.3	1.2	1.8	40	5.0	7.4	3.1	13	16	106	16
29	2.9	1.2	1.7	1.9	---	5.4	7.4	3.1	12	8.9	274	14
30	2.8	1.2	1.6	2.1	---	5.6	6.9	2.4	10	6.3	29	13
31	2.9	---	1.3	2.2	---	4.9	---	2.0	---	5.3	21	---
TOTAL	93.3	54.55	48.97	51.36	866.7	289.4	445.1	128.8	461.3	295.9	876.3	400.3
MEAN	3.01	1.82	1.58	1.66	31.0	9.34	14.9	4.15	15.4	9.55	28.3	13.3
MAX	6.4	3.5	5.7	2.2	186	25	68	6.7	280	74	274	116
MIN	1.7	.85	.78	.76	2.4	4.9	4.2	2.0	1.9	2.9	2.0	3.5
CFSM	.05	.03	.03	.03	.55	.17	.27	.07	.28	.17	.50	.24
IN.	.06	.04	.03	.03	.57	.19	.30	.09	.31	.20	.58	.27
AC-FT	185	108	97	102	1720	574	885	255	915	587	1740	794

CAL YR 1980 TOTAL 5261.62 MEAN 14.4 MAX 846 MIN .78 CFSM .26 IN 3.49 AC-FT 10440
WTR YR 1981 TOTAL 4012.98 MEAN 11.0 MAX 280 MIN .76 CFSM .20 IN 2.66 AC-FT 7960

05452000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW1/4 NW1/4 sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, near center of span on downstream side of bridge on U.S. Highway 30, 2.0 mi (3.2 km) upstream from Hog Run, 3.0 mi (4.8 km) south of Elberon, and 9.0 mi (14.5 km) upstream from mouth.

DRAINAGE AREA.--201 mi^2 (521 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage recorder. Datum of gage is 781.58 ft (238.226 m) NGVD (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945, and June 14, 1947, to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--36 years, 122 ft^3/s (3.455 m^3/s), 8.24 in/yr (209 mm/yr), 88,390 acre-ft/yr (109 hm^3/yr); median of yearly mean discharges, 100 ft^3/s (2.83 m^3/s), 6.8 in/yr (173 mm/yr), 72,400 acre-ft/yr (89.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,000 ft^3/s (991 m^3/s) June 13, 1947, gage height, 17.6 ft (5.36 m) from rating curve extended above 17,000 ft^3/s (481 m^3/s); maximum gage height, 17.78 ft (5.419 m) July 18, 1959; minimum daily discharge, 0.85 ft^3/s (0.024 m^3/s) Jan. 31, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1944, reached a stage of 19.9 ft (6.07 m), from floodmark at downstream side of bridge, discharge, about 30,000 ft^3/s (850 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,510 ft^3/s (42.8 m^3/s) July 25, gage height, 12.91 ft (3.935 m) at 2130 hours, no other peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum daily, 5.7 ft^3/s (0.16 m^3/s) Jan. 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	23	13	7.0	6.2	141	31	37	14	37	24	22
2	25	23	11	6.6	6.4	96	22	36	13	33	45	21
3	24	24	9.0	6.4	6.6	76	22	35	17	30	48	19
4	24	24	8.4	6.2	6.6	76	28	34	15	31	32	18
5	23	23	12	6.2	6.8	65	32	32	13	29	51	17
6	23	23	16	6.4	6.8	62	32	30	13	26	45	16
7	22	23	17	6.4	6.6	64	33	29	12	25	30	137
8	22	23	16	6.4	6.8	64	33	27	21	23	27	84
9	21	23	15	6.4	7.0	65	32	26	17	21	24	32
10	20	21	14	6.4	7.8	65	29	25	16	20	21	25
11	19	21	13	6.4	8.0	65	33	25	13	19	19	22
12	19	21	12	6.8	8.2	64	45	24	12	19	18	19
13	19	23	12	6.6	8.4	64	69	23	13	18	17	17
14	20	24	11	6.4	8.4	63	68	23	12	17	32	17
15	19	23	10	6.5	8.8	61	62	22	531	101	42	16
16	21	21	9.6	6.4	40	61	59	21	282	32	20	16
17	24	22	9.2	6.8	125	59	59	20	107	23	17	15
18	20	21	8.8	7.2	94	57	58	19	79	21	16	14
19	18	21	8.2	7.2	73	55	57	18	66	20	15	14
20	17	23	7.6	6.8	58	54	55	17	59	21	14	13
21	16	21	7.4	6.8	53	52	54	17	55	18	14	13
22	16	22	7.2	7.2	182	51	53	17	52	17	13	12
23	16	23	7.2	7.2	353	49	52	18	49	32	13	12
24	24	21	7.4	7.2	240	47	51	18	471	24	30	11
25	26	19	7.6	7.2	372	46	49	17	103	369	18	50
26	22	20	8.0	7.0	570	44	45	16	73	199	28	319
27	22	20	8.2	6.4	903	43	42	15	65	41	81	178
28	23	16	8.1	6.6	470	42	41	15	57	52	116	72
29	22	16	8.0	6.0	---	41	39	16	49	37	49	54
30	23	14	7.6	5.7	---	40	38	15	43	31	32	47
31	23	---	7.2	5.7	---	39	---	14	---	27	25	---
TOTAL	658	642	316.7	204.5	3642.4	1871	1323	701	2342	1413	976	1322
MEAN	21.2	21.4	10.2	6.60	130	60.4	44.1	22.6	78.1	45.6	31.5	44.1
MAX	26	24	17	7.2	903	141	69	37	531	369	116	319
MIN	16	14	7.2	5.7	6.2	39	22	14	12	17	13	11
CFSM	.11	.11	.05	.03	.65	.30	.22	.11	.39	.23	.16	.22
IN.	.12	.12	.06	.04	.67	.35	.24	.13	.43	.26	.18	.24
AC-FT	1310	1270	628	406	7220	3710	2620	1390	4650	2800	1940	2620

CAL YR 1980 TOTAL 26914.7 MEAN 73.5 MAX 1800 MIN 7.2 CFSM .37 IN 4.98 AC-FT 53390
WTR YR 1981 TOTAL 15411.6 MEAN 42.2 MAX 903 MIN 5.7 CFSM .21 IN 2.85 AC-FT 30570

05452200 WALNUT CREEK NEAR HARTWICK, IA

LOCATION.--Lat 41°50'08", long 92°23'10", in SE1/4 SW1/4 sec.8, T.81 N., R.13 W., Poweshiek County, Hydrologic Unit 07080208, on left bank 5 ft (2 m) upstream from bridge on county highway V21, 1.2 mi (1.9 km) downstream from North Walnut Creek, 4.0 mi (6.4 km) northwest of Hartwick, and 6.5 mi (10.5 km) upstream from mouth.

DRAINAGE AREA.--70.9 mi² (184 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1558: 1950 (P), 1951-57.

GAGE.--Water-stage recorder. Datum of gage is 786.59 ft (239.753 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 41.3 ft³/s (1.170 m³/s), 7.91 in/yr (201 mm/yr), 29,920 acre-ft/yr (36.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft³/s (193 m³/s) Aug. 16, 1977, gage height, 16.30 ft (4.968 m), from rating curve extended above 2,600 ft³/s (73.6 m³/s) on basis of contracted-opening and flow-over-embankment measurement of peak flow; no flow at times for most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 17.7 ft (5.39 m), from information by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 895 ft³/s (25.3 m³/s) June 24, gage height, 10.08 ft (3.072 m), no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 0.45 ft³/s (0.013 m³/s) Dec. 25-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.0	1.7	.90	.92	29	3.9	8.7	3.1	7.0	2.7	4.2
2	1.8	2.1	1.6	.51	.94	19	3.8	8.6	3.4	6.2	6.8	3.7
3	1.8	2.3	2.1	.62	.90	15	4.9	8.4	3.8	8.4	11	3.4
4	1.3	2.2	2.6	.61	.64	18	12	8.0	3.7	8.0	3.9	2.8
5	1.3	2.0	3.1	.60	.70	12	6.2	7.9	3.1	6.4	4.6	2.7
6	1.4	2.1	3.8	.92	.72	11	6.4	7.3	2.9	5.5	3.2	2.5
7	1.8	2.0	3.4	.89	.78	9.6	5.2	6.9	2.7	5.1	2.7	3.0
8	1.8	2.1	6.3	.61	.90	9.6	9.3	6.6	4.2	4.6	2.4	3.8
9	1.8	3.0	3.6	.92	.96	9.8	6.7	7.0	3.6	4.7	2.2	2.8
10	1.8	1.8	2.8	.81	1.1	8.8	16	6.8	3.4	4.0	1.8	2.2
11	1.2	1.7	2.0	.81	1.3	8.0	34	6.8	2.6	3.8	1.4	1.9
12	1.4	1.9	1.6	.80	1.6	7.7	18	6.8	2.9	3.9	1.2	1.9
13	1.8	2.9	1.2	.81	1.4	7.0	78	5.9	4.0	3.6	1.2	1.8
14	1.9	4.3	1.0	.92	2.9	6.4	73	5.9	3.2	3.3	43	1.6
15	1.7	2.6	.78	.92	8.4	6.9	33	4.8	18	9.3	28	1.8
16	3.5	2.2	.72	.81	39	5.7	28	4.1	9.1	4.6	5.4	1.8
17	3.0	2.1	.66	.84	60	6.1	23	4.4	4.3	3.7	3.2	1.4
18	1.8	2.0	.62	.88	68	5.3	17	6.0	3.6	3.6	2.4	1.4
19	1.8	2.1	.59	.82	39	5.2	16	4.3	3.3	3.7	1.9	1.6
20	1.8	2.1	.56	.70	27	5.2	16	3.8	3.3	3.4	1.7	1.8
21	1.4	2.1	.59	.88	17	5.0	14	3.7	3.8	3.0	1.6	1.4
22	1.3	2.1	.52	.88	40	5.1	19	4.0	3.6	2.7	1.3	1.3
23	1.3	2.1	.49	.84	122	4.7	17	5.1	11	11	1.3	1.3
24	6.0	2.1	.47	.58	119	4.7	14	4.8	331	3.8	7.1	1.6
25	3.4	2.1	.48	.84	217	4.8	13	4.3	38	3.6	3.3	28
26	2.2	1.8	.49	.78	160	5.0	12	4.4	29	4.0	65	132
27	2.2	1.9	.49	.78	104	4.8	10	3.9	14	5.1	37	24
28	2.7	2.0	.48	.70	43	4.6	10	4.0	11	6.5	18	10
29	2.6	2.1	.47	.60	---	5.0	11	4.1	9.2	4.2	68	7.7
30	2.4	1.9	.48	.64	---	5.0	9.3	3.7	9.0	3.0	10	6.7
31	2.3	---	.49	.58	---	4.6	---	3.3	---	2.6	6.2	---
TOTAL	59.9	65.0	44.74	19.37	1069.98	249.3	532.7	171.4	536.9	150.4	387.1	268.4
MEAN	1.93	2.17	1.44	.62	38.2	8.04	17.8	5.53	17.9	4.85	12.5	8.95
MAX	6.0	4.3	6.3	.94	217	29	78	8.7	331	11	68	132
MIN	1.2	1.7	.45	.50	.92	4.6	3.8	3.3	2.7	2.6	1.2	1.3
CFSM	.03	.03	.02	.009	.54	.11	.25	.08	.25	.07	.18	.13
IN.	.03	.03	.02	.01	.56	.13	.28	.09	.28	.08	.20	.14
AC-FT	119	129	89	38	2120	494	1060	340	1060	298	768	532

CAL YR 1980 TOTAL 5419.04 MEAN 14.8 MAX 304 MIN .45 CFSM .21 IN 2.84 AC-FT 10750
WTR YR 1981 TOTAL 3553.15 MEAN 9.73 MAX 331 MIN .45 CFSM .14 IN 1.86 AC-FT 7050

05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in SW1/4 SW1/4 sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft (3 m) downstream from bridge on county highway V52, 0.4 mi (0.6 km) south of Ladora, 1.2 mi (1.9 km) downstream from Coats Creek, 2.8 mi (4.5 km) upstream from Little Bear Creek, and 8.1 mi (13.0 km) upstream from mouth.

DRAINAGE AREA.--189 mi² (490 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Bear Creek at Ladora.

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 754.94 ft (230.106 m) NGVD. Prior to June 28, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--36 years, 116 ft³/s (3.285 m³/s), 8.33 in/yr (212 mm/yr), 84,040 acre-ft/yr (104 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Mar. 30, 1960, gage height, 14.60 ft (4.450 m); maximum gage height, 15.32 ft (4.670 m) Sept. 18, 1977; no flow for several days in 1956 and 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,390 ft³/s (96.0 m³/s) June 24, gage height, 21.50 ft (6.553 m) at 0730 hours, no other peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 1.8 ft³/s (0.051 m³/s) Jan. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	10	7.4	2.4	2.0	117	17	34	13	75	17	24
2	4.8	8.9	7.2	2.4	2.0	83	16	32	12	57	22	19
3	5.5	9.4	6.9	2.4	2.1	68	15	31	13	49	44	17
4	6.1	8.4	7.4	2.4	2.1	65	45	30	12	65	27	15
5	5.7	6.8	8.1	2.3	2.2	55	32	33	11	51	22	14
6	5.4	7.2	9.1	2.3	2.3	46	24	26	8.9	41	23	13
7	5.1	6.8	16	2.3	2.3	42	23	25	8.5	36	19	17
8	4.8	6.9	50	2.2	2.3	40	23	24	9.5	34	18	20
9	4.8	6.8	23	2.2	2.4	39	26	25	10	30	17	17
10	4.8	5.9	16	2.2	2.5	36	39	24	9.2	29	14	14
11	4.1	5.9	9.4	2.1	2.5	35	170	24	7.8	26	13	11
12	4.5	6.8	11	2.1	2.5	33	99	23	6.6	26	11	9.2
13	4.5	8.6	12	2.1	2.6	31	158	24	7.1	23	10	8.0
14	5.5	13	10	2.1	2.7	29	149	26	6.1	22	21	7.4
15	10	12	9.4	2.1	2.8	29	94	23	21	37	38	8.0
16	12	8.8	8.4	2.1	21	26	80	20	41	33	19	8.2
17	18	7.1	7.4	2.1	82	26	76	19	22	24	14	8.1
18	10	6.6	6.6	2.0	100	24	61	21	15	57	12	8.5
19	6.8	5.8	6.8	2.0	79	23	54	20	12	26	11	8.0
20	5.8	7.0	5.8	2.1	68	23	51	18	11	23	9.7	7.4
21	4.3	7.7	4.1	2.0	81	23	46	17	10	21	9.2	7.2
22	6.2	8.3	3.2	1.9	118	22	57	17	11	21	8.2	6.3
23	4.8	9.2	2.7	1.9	122	21	67	19	9.8	23	7.5	5.8
24	14	8.9	2.3	1.9	230	21	48	20	1870	21	9.3	7.8
25	23	10	2.1	1.9	506	21	43	19	278	22	14	19
26	12	11	2.1	2.0	624	21	42	17	147	24	12	58
27	9.0	7.6	2.1	2.1	507	21	39	16	107	26	184	45
28	10	8.2	2.2	2.0	213	20	51	15	88	35	31	23
29	11	8.4	2.3	1.9	---	20	49	15	74	27	131	20
30	9.9	8.0	2.3	1.8	---	20	38	15	60	21	50	17
31	10	---	2.4	1.9	---	20	---	13	---	19	31	---
TOTAL	248.0	246.0	265.7	65.2	2743.3	1097	1732	685	2625.5	1024	838.9	470.9
MEAN	8.00	8.20	8.57	2.10	98.0	35.4	57.7	22.1	87.5	33.0	27.1	15.7
MAX	23	13	50	2.4	624	117	170	34	1870	75	184	58
MIN	4.1	5.8	2.1	1.8	2.0	20	15	13	6.1	19	7.5	5.8
CFSM	.04	.04	.05	.01	.52	.19	.31	.12	.46	.18	.14	.08
IN.	.05	.05	.05	.01	.54	.22	.34	.13	.52	.20	.17	.09
AC-FT	492	488	527	129	5440	2180	3440	1360	5210	2030	1660	934

CAL YR 1980 TOTAL 11916.9 MEAN 32.6 MAX 708 MIN 2.1 CFSM .17 IN 2.35 AC-FT 23640
WTR YR 1981 TOTAL 12041.8 MEAN 33.0 MAX 1870 MIN 1.8 CFSM .18 IN 2.37 AC-FT 23880

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.-- Lat 41°48'48" long 92°03'51", in SE1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 5 ft (2 m) upstream from bridge on State Highway 411, 1.0 mi (1.6 km) downstream from Big Bear Creek, 0.8 mi (1.3 km) north of Marengo, 4.6 mi (7.4 km) upstream from Hilton Creek, and at mile 139.1 (223.8 km).

DRAINAGE AREA.--2,794 mi² (7,236 km²).

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1508: 1957.

GAGE.--Water-stage recorder. Datum of gage is 720.52 ft. (219.614 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Twelve discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--25 years, 1,662 ft³/s (47.07 m³/s), 8.08 in/yr (205 mm/yr), 1,204,000 acre-ft/yr (1,480 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,800 ft³/s (872 m³/s) Mar. 31, 1960, gage height, 19.21 ft (5.855 m); maximum gage height, 19.79 ft (6.032 m) July 12, 1969; minimum daily discharge, 24 ft³/s (0.68 m³/s) Jan. 29 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,030 ft³/s (142 m³/s) June 24, gage height, 12.91 ft (3.935 m), no peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 130 ft³/s (3.682 m³/s) Feb. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	874	555	340	230	135	1600	335	660	622	2920	2260	853
2	782	541	350	220	140	1130	330	622	537	2810	2210	821
3	680	516	360	210	135	877	330	591	510	2620	2150	860
4	606	493	360	200	135	771	421	573	539	2370	2050	911
5	554	481	370	190	135	695	428	555	532	2090	1920	952
6	522	469	363	190	135	621	464	526	440	1800	1730	920
7	497	466	404	185	130	559	597	495	403	1530	1600	875
8	481	457	534	180	130	513	605	488	404	1270	1520	1050
9	466	450	466	180	130	482	698	491	382	1080	1430	1140
10	444	435	404	170	135	463	719	517	370	951	1320	865
11	418	419	480	170	140	450	999	546	389	851	1220	732
12	398	403	560	160	140	434	982	553	390	768	1150	659
13	388	412	450	160	140	419	1600	549	400	692	1060	600
14	387	432	680	150	150	407	1820	544	395	631	1030	555
15	378	426	660	150	170	399	1490	528	623	659	1340	507
16	397	414	580	150	230	391	1310	498	964	731	1140	472
17	415	401	440	145	510	386	1210	475	734	760	915	441
18	387	392	320	150	950	377	1100	457	977	951	807	416
19	382	389	410	150	900	364	998	448	1090	818	729	399
20	382	388	330	145	860	358	930	430	1030	822	671	392
21	376	385	320	140	807	352	862	412	962	889	592	382
22	386	385	300	140	930	349	834	397	870	948	500	363
23	419	390	300	140	1170	346	864	396	765	1010	425	346
24	467	389	300	140	1240	338	810	402	3050	1070	451	340
25	493	374	290	150	1900	333	820	391	2580	1080	587	403
26	514	358	280	150	2680	330	762	389	3160	1970	543	1120
27	500	350	280	140	2370	330	718	394	3290	2100	822	1210
28	487	350	270	140	2310	329	741	408	3150	1840	1020	891
29	497	350	260	140	---	330	738	496	3080	1920	962	742
30	543	340	250	140	---	330	697	611	3020	2120	982	695
31	563	---	240	135	---	332	---	670	---	2250	943	---
TOTAL	15093	12610	11951	5040	18937	15395	25212	15512	35658	44321	36079	20912
MEAN	487	420	386	163	676	497	840	500	1189	1430	1164	697
MAX	874	555	680	230	2680	1600	1820	670	3290	2920	2260	1210
MIN	376	340	240	135	130	329	330	389	370	631	425	340
CFSM	.17	.15	.14	.06	.24	.18	.30	.18	.43	.51	.42	.25
IN.	.20	.17	.16	.07	.25	.20	.34	.21	.47	.59	.48	.28
AC-FT	29920	25010	23700	10000	37560	30540	50010	30770	70730	87910	71560	41480

CAL YR 1980 TOTAL 404484 MEAN 1105 MAX 6200 MIN 240 CFSM .40 IN 5.39 AC-FT 802300
WTR YR 1981 TOTAL 256710 MEAN 703 MAX 3290 MIN 130 CFSM .25 IN 3.42 AC-FT 509200

05453510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi (3.7 km) upstream from Rapid Creek, 4.3 mi (6.9 km) northeast of Coralville Post Office and at mile 83.3 (134.0 km).

DRAINAGE AREA.--3,115 mi² (8,068 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1958. Storage began in Septemb.r 1958. Releases controlled by three gates, 8.33 ft (2.539 m) wide and 20 ft (6 m) high, into forechamber of 23-ft (7 m) diameter concrete conduit through dam. Inlet invert elevation at 646.0 ft (197 m). No dead storage. Maximum design discharge through gates is 20,000 ft³/s (566 m³/s). Ungated spillway is concrete overflow section 500 ft (152 m) in length at elevation 712 ft (217 m) NGVD, contents, 469,000 acre-ft (578 hm³), surface area, 24,800 acres (10,040 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 670 ft (204 m) Feb. 15 to June 15, surface area, 1,820 acres (737 hm²), 680 ft (207 m) June 15 to Sept. 25, surface area, 4,900 acres (1,983 hm²), 683 ft (208 m) Sep. 25 to Dec. 15, and 680 ft (207 m) December 15 to Feb. 1 with a minimum release of 150 ft³/s (4.25 m³/s) and maximum release of 10,000 ft³/s (283 m³/s) Dec. 15 to May 1 and 6,000 ft³/s (170 m³/s) May 1 to Dec. 15.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 472,000 acre-ft (582 hm³) July 21, 1969, elevation, 711.85 ft (216.972 m); minimum daily contents, 488 acre-ft (0.602 hm³) Jan. 15, 1975; minimum elevation, 658.77 ft (200.793 m) Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 86,300 acre-ft (106 hm³) Sept. 27; maximum elevation, 685.00 ft (208.788 m) Sept. 27; minimum daily contents, 29,500 acre-ft (36.4 hm³) Mar. 17; minimum elevation, 670.18 ft (204.271 m) Mar. 17.

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72300	73100	72600	59000	60700	37600	35000	55600	61200	68400	63100	61200
2	72200	73100	72800	59000	60700	35600	35300	55700	61400	67300	64100	61200
3	71800	73100	73000	58900	60700	34100	36000	55800	61600	66300	64700	62100
4	71600	72800	73200	58800	60700	33800	36700	56000	61600	64900	64900	63200
5	71600	72700	73400	58700	60800	33400	37600	56100	61600	63800	64900	64300
6	71800	72600	73600	58700	60700	32700	38300	56300	61800	63700	63900	65700
7	71800	72300	73700	58600	58900	31900	39300	56700	61800	63400	62800	67800
8	71800	72100	73100	58600	56100	31000	40500	57200	61800	63400	61800	69000
9	71800	72100	72300	58600	52700	30700	41700	57600	61800	63700	60800	70300
10	71800	71600	71500	58500	50400	30600	43600	58000	61900	63600	60400	71100
11	71800	71200	70700	58600	47700	30200	46400	58400	61900	63300	60400	71800
12	71800	71200	70700	58600	45400	29900	47200	58800	62500	62800	60600	72400
13	71900	71600	70700	58600	43200	29700	47000	59300	63400	62700	60700	73300
14	72300	71700	70600	58700	41300	29700	48700	60100	63500	62200	61400	74400
15	72600	71800	69700	58700	40900	29800	50100	60700	67800	62400	61200	75100
16	72900	72000	68100	58700	41300	29600	50800	61300	67300	62300	60300	75400
17	72700	72300	66600	58700	41800	29500	51100	61400	65600	62300	59500	75600
18	72400	72400	65000	58700	41800	29600	51400	61800	64000	62600	59400	75600
19	72200	72500	63400	58700	42100	29600	51700	61900	63600	62700	59100	75600
20	72100	72700	61800	58700	42600	29600	52100	61800	63600	62900	60500	75600
21	72100	72600	60200	58800	42900	29700	52500	61700	63300	63100	59800	75600
22	72400	72400	59300	58900	42700	30200	53200	61700	63200	63300	59800	75200
23	72700	72700	59000	59000	43000	30200	53800	61800	63000	63300	61200	75200
24	72700	72600	58900	59100	42900	30800	53800	61700	64800	62900	61200	75400
25	72600	72400	58700	59300	42900	31500	53600	61000	66300	62900	61100	76200
26	72500	72300	58700	59500	42200	32200	53700	61800	66200	62900	61000	85600
27	72600	72300	58700	59600	40900	32900	53900	61100	64600	63400	61300	86300
28	72700	72300	58800	59800	39200	33600	54400	61100	64400	63700	61900	83600
29	72800	72300	58800	59900	---	34300	55100	61100	66400	63900	61600	80100
30	72900	72300	58900	60100	---	34800	55400	60900	68800	64100	61100	76800
31	73000	---	58900	60400	---	35000	---	61000	---	62900	61400	---
MAX	73000	73100	73700	60400	60800	37600	55400	61900	68800	68400	64900	86300
MIN	71600	71200	58700	58500	39200	29500	35000	55600	61200	62200	59100	61200

WTR YR 1981 MAX 86300 MIN 29500

05454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°41'19", long 91°29'15", in NE1/4 NE1/4 sec.36, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft (24 m) upstream from bridge on State Highway 1, 3.5 mi (5.6 km) northeast of Iowa City, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--25.3 mi² (65.5 km²).

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M), 1946. WSP 1708: 1951 (P), 1952. WDR IOWA 1967: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft (205.350 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--44 years, 15.3 ft³/s (0.433 m³/s), 8.21 in/yr (209 mm/yr), 11,080 acre-ft/yr (13.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s (173 m³/s) May 23, 1965, gage height, 14.10 ft (4.298 m), from contracted-opening measurement of peak flow; maximum gage height, 14.93 ft (4.551 m) July 17, 1972; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 15	1350	1,060	30.0	9.89	3.014	Sept. 26	unknown	1,040	29.5	9.84	2.999
June 29	1810	*2,140	60.6	*11.86	3.615						

Minimum daily discharge, 1.4 ft³/s (0.040 m³/s) Sept. 23,24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.0	3.0	5.2	2.8	20	3.8	11	2.9	28	4.0	5.1
2	3.2	2.9	2.8	4.5	2.5	16	3.7	11	3.0	21	40	4.6
3	3.8	2.9	2.0	3.9	2.1	13	3.8	10	3.2	17	21	4.2
4	3.1	2.9	2.9	3.6	2.0	13	14	10	2.7	17	11	3.8
5	2.8	2.6	3.7	3.3	2.1	11	7.6	10	2.5	13	166	3.7
6	2.6	2.6	4.5	3.2	2.2	9.9	5.8	8.7	2.4	11	47	3.3
7	2.7	3.0	17	3.2	2.2	9.0	5.5	7.8	2.0	9.5	25	7.6
8	2.8	2.9	47	3.1	2.1	8.4	6.2	8.1	2.5	8.9	18	6.6
9	2.5	2.8	30	3.0	2.0	8.3	8.7	7.6	2.5	7.8	14	4.0
10	2.0	2.5	22	2.8	1.9	8.1	43	7.1	2.5	6.6	11	3.5
11	1.8	2.3	18	2.7	1.8	7.8	187	6.6	1.9	6.9	9.5	3.0
12	2.1	2.4	16	2.6	1.7	7.9	63	6.4	1.9	6.2	8.4	2.8
13	2.2	2.8	13	2.6	1.9	7.6	122	6.9	19	5.8	7.3	2.5
14	2.1	3.6	11	2.5	2.1	6.9	65	7.8	4.7	9.2	85	2.4
15	2.5	3.0	10	2.5	2.5	7.4	45	7.1	239	17	110	2.3
16	4.3	2.9	9.5	2.4	6.2	6.6	38	6.0	38	8.4	28	2.1
17	4.5	2.7	9.4	2.3	15	6.7	32	5.5	21	6.4	20	2.0
18	2.8	2.6	6.5	2.4	13	5.8	26	5.5	15	5.8	15	2.0
19	2.4	2.5	4.9	2.8	10	5.6	23	5.1	12	5.3	12	2.0
20	2.4	2.6	4.4	3.3	8.0	5.4	20	4.6	9.7	5.1	10	2.0
21	2.4	2.4	4.3	4.3	7.5	5.5	18	4.4	8.9	4.2	9.2	1.8
22	2.3	2.5	4.2	3.8	75	5.1	20	4.4	8.1	3.8	8.1	1.6
23	2.1	3.3	4.1	3.7	44	5.2	21	4.4	6.4	4.2	7.3	1.4
24	4.4	3.2	3.8	3.9	76	5.0	16	5.3	108	3.9	7.3	1.4
25	4.0	2.4	3.6	5.0	42	5.0	14	4.5	21	16	6.4	8.7
26	2.9	2.2	5.0	5.8	26	5.2	13	4.0	14	11	6.0	576
27	2.9	2.8	5.6	4.7	28	4.9	12	4.2	12	10	6.2	173
28	3.8	3.3	6.0	4.0	27	4.6	13	4.0	10	13	7.1	46
29	3.2	3.2	4.9	3.2	---	5.3	13	4.2	395	7.8	6.0	26
30	3.1	2.9	6.0	3.0	---	5.5	14	3.5	74	6.0	5.5	18
31	3.0	---	5.7	3.0	---	4.6	---	3.0	---	4.7	5.1	---
TOTAL	89.5	83.7	290.9	106.3	409.6	240.3	877.1	198.8	1045.8	300.4	726.4	923.4
MEAN	2.89	2.79	9.38	3.43	14.6	7.75	29.2	6.41	34.9	9.69	23.4	30.8
MAX	4.5	3.6	47	5.8	76	20	187	11	395	28	166	576
MIN	1.8	2.2	2.0	2.3	1.7	4.6	3.7	3.0	1.9	3.8	4.0	1.4
CFSM	.11	.11	.37	.14	.58	.31	1.16	.25	1.38	.38	.93	1.22
IN.	.13	.12	.43	.16	.60	.35	1.29	.29	1.54	.44	1.07	1.36
AC-FT	178	166	577	211	812	477	1740	394	2070	596	1440	1830

CAL YR 1980 TOTAL 3708.96 MEAN 10.1 MAX 164 MIN .15 CFSM .40 IN 5.45 AC-FT 7360
WTR YR 1981 TOTAL 5292.20 MEAN 14.5 MAX 576 MIN 1.4 CFSM .57 IN 7.78 AC-FT 10500

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	5.6	8.5	4.9	10	24	29	20	23	23	15	5.5	7.5	15
RUNOFF (INCHES)	0.26	0.37	0.22	0.46	0.95	1.32	0.88	1.05	1.01	0.60	0.26	0.33	8.08
STD. DEVIATION	0.41	0.74	0.27	0.60	0.95	1.05	0.66	1.05	0.88	1.04	0.36	0.70	4.56
PERCENT OF ANNUAL	3.2	4.6	2.7	5.7	12	16	11	13	13	8.4	3.1	4.1	----
PRECIP. (INCHES)	2.5	1.9	1.4	1.2	1.0	2.3	3.4	3.8	4.8	4.4	2.8	3.5	33.0

05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'38", long 91°35'55", in NE1/4 SE1/4 sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 50 ft (15 m) upstream from bridge on county highway, 1.1 mi (1.8 km) west of post office in Coralville, 1.5 mi (2.4 km) downstream from Deer Creek and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--98.1 mi^2 (254.1 km^2).

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 647.48 ft (197.352 m) NGVD (levels by Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--29 years, 62.5 ft^3/s (1.770 m^3/s), 8.65 in/yr (220 mm/yr), 45,280 acre-ft/yr (55.8 hm^3/yr); median of yearly mean discharges, 46 ft^3/s (1.30 m^3/s), 6.4 in/yr (163 mm/yr), 33,300 acre-ft/yr (41.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,630 ft^3/s (188 m^3/s) May 17, 1974, gage height, 13.93 ft (4.246 m); no flow Jan. 18 to Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft^3/s (28.3 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 24	0815	1,040	29.4	9.06	2.761
June 29	1730	*1,050	29.7	*9.11	2.777
Aug. 5	unknown	1,040	29.4	9.06	2.761

Minimum daily discharge, 4.1 ft^3/s (0.12 m^3/s) Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	9.0	9.0	12	8.0	94	13	34	12	67	16	40
2	9.0	8.5	8.3	11	6.8	69	12	30	11	50	39	22
3	7.6	8.5	7.8	8.8	5.9	56	12	27	12	41	48	16
4	8.1	8.5	7.3	7.8	5.3	57	66	26	12	55	24	13
5	7.6	8.1	11	7.5	5.2	51	35	28	11	46	484	12
6	7.2	7.6	18	7.3	5.1	43	25	25	10	34	263	11
7	7.2	8.1	38	7.0	5.0	39	22	24	9.6	38	79	16
8	7.2	8.5	120	6.4	4.6	38	24	24	9.8	20	54	29
9	7.2	7.6	72	5.9	4.3	37	24	25	11	17	42	15
10	6.9	7.2	49	5.5	4.1	35	37	24	10	18	33	12
11	6.0	6.6	40	5.4	4.3	34	158	22	9.6	27	29	10
12	5.6	6.9	30	5.5	4.7	32	101	21	9.5	21	26	8.9
13	6.3	8.5	25	5.6	5.6	31	96	22	49	18	23	8.3
14	7.2	11	23	5.5	8.4	28	143	24	27	51	246	8.5
15	7.2	11	22	5.2	13	28	105	23	316	53	328	7.3
16	11	8.1	21	5.0	26	27	84	20	196	26	74	7.1
17	20	7.2	20	4.9	50	25	75	18	63	20	35	7.2
18	9.9	8.1	19	5.1	38	24	59	19	42	17	26	7.2
19	7.2	7.9	17	5.6	34	24	51	18	36	17	23	6.9
20	6.3	7.8	15	7.2	37	22	48	17	31	17	21	6.6
21	6.6	7.9	12	9.8	60	22	43	15	28	14	19	6.8
22	6.6	8.1	11	11	103	20	48	15	26	12	18	6.3
23	6.6	9.0	12	13	129	18	66	16	23	14	16	6.1
24	9.4	9.9	13	14	170	18	48	28	649	14	15	5.8
25	14	9.0	13	15	293	18	40	20	225	47	15	39
26	9.0	8.6	12	14	288	16	37	17	144	26	14	406
27	8.5	8.9	10	13	171	16	34	20	71	24	15	235
28	11	9.0	9.4	12	138	15	40	18	55	36	20	91
29	10	9.2	10	9.8	---	16	43	18	298	24	14	64
30	9.4	9.2	11	8.6	---	17	39	15	247	15	13	48
31	9.9	---	12	8.2	---	15	---	13	---	16	12	---
TOTAL	264.7	253.5	697.8	262.6	1627.3	985	1628	666	2653.5	895	2084	1172.0
MEAN	8.54	8.45	22.5	8.47	58.1	31.8	54.3	21.5	88.5	28.9	67.2	39.1
MAX	20	11	120	15	293	94	158	34	649	67	484	406
MIN	5.6	6.6	7.3	4.9	4.1	15	12	13	9.5	12	12	5.8
CFSM	.09	.09	.23	.09	.59	.32	.55	.22	.90	.30	.69	.40
IN.	.10	.10	.26	.10	.62	.37	.62	.25	1.01	.34	.79	.44
AC-FT	525	503	1380	521	3230	1950	3230	1320	5260	1780	4130	2320

CAL YR 1980 TOTAL 11041.3 MEAN 30.2 MAX 496 MIN 5.0 CFSM .31 IN 4.19 AC-FT 21900
WTR YR 1981 TOTAL 13189.4 MEAN 36.1 MAX 649 MIN 4.1 CFSM .37 IN 5.00 AC-FT 26160

05454500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in SE1/4 SE1/4 sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft (8 m) downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft (53 m) downstream from University Dam, 0.8 mi (1.3 km) upstream from Ralston Creek, 3.6 mi (5.8 km) downstream from Clear Creek, and at mile 74.2 (119.4 km).

DRAINAGE AREA.--3,271 mi^2 (8,472 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 29.00 ft (8.839 m) above Iowa City datum, and 617.27 ft (188.144 m) NGVD. Oct. 1, 1934 to Sept. 30, 1972, at datum 10.00 ft (3.05 m) higher. See WSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Records excellent. Slight fluctuation at low stages caused by powerplant above station. Flow regulated by Coralville Lake (station 05453510) 9.1 mi (14.6 km) upstream, since Sept. 17, 1958. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--78 years, 1,641 ft^3/s (46.47 m^3/s), 6.81 in/yr (173 mm/yr), 1,189,000 acre-ft/yr (1,470 hm^3/yr); median of yearly mean discharges, 1,420 ft^3/s (40.2 m^3/s), 5.9 in/yr (150 mm/yr), 1,029,000 acre-ft/yr (1,270 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft^3/s (1,204 m^3/s) June 8, 1918, gage height, 19.6 ft (5.974 m) from graph based on gage readings, site and datum then in use; minimum daily, 29 ft^3/s (0.82 m^3/s) Oct. 21, 22, 1915, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 17, 1881, reached a stage of 21.1 ft (6.43 m), from floodmarks at site and datum in use 1913-21, from information by local resident, discharge, 51,000 ft^3/s (1,440 m^3/s). Maximum stage known since at least 1850, about 3 ft (1 m) higher than that of July 17, 1881, occurred in June 1851, discharge, 70,000 ft^3/s (1,980 m^3/s), estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,230 ft^3/s (176 m^3/s) June 29, gage height, 17.31 ft (5.276 m); minimum daily, 146 ft^3/s (4.13 m^3/s) Jan. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	839	471	336	226	163	3270	375	770	498	3740	1910	1130
2	899	545	328	238	160	2680	343	728	501	3870	2040	779
3	847	552	330	245	157	1980	194	667	507	3410	2230	438
4	707	540	324	250	153	1320	273	632	501	3430	2380	412
5	580	539	331	255	150	1150	217	625	495	2870	3020	411
6	528	541	344	250	204	1130	200	559	492	2130	3030	307
7	524	543	468	235	657	1110	188	455	493	1940	2690	219
8	524	543	881	228	1220	1100	186	383	477	1600	2070	222
9	524	545	941	200	1200	810	339	385	414	1170	1940	393
10	485	546	885	185	1190	582	687	378	364	1160	1670	668
11	442	546	858	170	1040	624	1200	376	319	1200	1270	515
12	384	465	595	155	886	732	1320	376	311	1140	1130	387
13	299	363	412	146	756	642	1830	379	350	953	1130	287
14	259	358	448	150	632	576	1790	386	337	732	1570	185
15	243	354	782	156	404	582	1720	381	1120	931	1970	276
16	326	350	1190	147	205	576	1610	376	1460	963	1840	372
17	544	351	1180	149	300	534	1410	375	1880	924	1490	371
18	558	347	1170	151	544	498	1290	370	1630	802	1160	381
19	510	343	1140	156	659	498	1100	431	1130	773	860	400
20	468	345	1160	157	729	498	994	485	1120	757	546	381
21	435	376	1130	158	964	445	977	482	1120	755	462	363
22	318	442	852	158	1560	406	896	453	1030	753	459	359
23	241	446	480	159	1860	374	928	430	944	849	431	326
24	420	440	300	159	1850	219	997	494	2240	1100	548	306
25	526	433	265	161	2260	202	984	519	2590	1470	670	448
26	522	414	245	164	2810	205	923	516	3230	1580	610	1550
27	492	344	225	165	3350	202	863	513	3200	1790	563	1610
28	442	343	226	168	3550	200	834	524	3200	2000	769	2380
29	439	340	224	168	---	207	790	513	3830	2070	1200	2540
30	444	337	228	166	---	219	790	503	2910	1910	1400	2250
31	423	---	226	168	---	286	---	500	---	1900	1270	---
TOTAL	15192	13102	18484	5643	29513	23857	26248	14964	38693	50672	44328	20666
MEAN	490	437	596	182	1058	770	875	483	1290	1635	1430	689
MAX	899	552	1190	255	3550	3270	1830	770	3830	3870	3030	2540
MIN	241	337	224	146	150	200	186	370	311	732	431	185
AC-FT	30130	25990	36660	11190	58740	47320	52060	29680	76750	100500	87920	40990

CAL YR 1980 TOTAL 423881 MEAN 1158 MAX 5090 MIN 146 AC-FT 840800
WTR YR 1981 TOTAL 301462 MEAN 826 MAX 3870 MIN 146 AC-FT 597900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	801	925	680	857	1,330	3,050	3,050	2,610	3,320	2,100	1,160	941	1,740
RUNOFF (INCHES)	0.28	0.32	0.24	0.30	0.42	1.08	1.04	0.92	1.13	0.74	0.41	0.32	7.22
STD. DEVIATION	0.30	0.36	0.27	0.35	0.23	0.72	0.84	0.73	1.07	0.66	0.42	0.29	3.73
PERCENT OF ANNUAL	3.9	4.4	3.3	4.1	5.8	15	14	13	16	10	5.7	4.4	----
PRECIP. (INCHES)	2.4	1.8	1.3	1.2	1.0	2.2	3.3	3.7	4.6	4.3	2.8	3.4	32.0

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at Benton Street bridge at Iowa City, 0.5 mi (0.8 km) downstream from gaging station.

PERIOD OF RECORD.--September 1906 to September 1907, water years 1944 to current year.

PERIOD OF DAILY RECORD.--
CHEMICAL ANALYSIS: September 1906 to September 1907, October 1943 to September 1954.
SPECIFIC CONDUCTANCE: October 1968 to current year.
WATER TEMPERATURES: January 1944 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1943 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at times of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 750 micromhos Feb. 25, 1972, Mar. 2, 7, 1977; minimum daily, 150 micromhos May 17, 1974.
WATER TEMPERATURES: Maximum daily, 32.0°C July 19, 1957, Aug. 24, 25, 1959, June 27, 1971; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,800 mg/L June 13, 1953; minimum daily mean, 1 mg/L Feb. 4,1979.
SEDIMENT LOADS: Maximum daily, 177,000 tons (161,000 tonnes) May 23, 1944; minimum daily, 0.82 ton (0.74 tonne) Jan. 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 660 micromhos Jan. 29; minimum daily, 350 micromhos June 24.
WATER TEMPERATURES: Maximum daily, 30.5°C July 13; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3130 mg/L June 29; minimum daily mean, 8 mg/L Dec. 6.
SEDIMENT LOADS: Maximum daily, 34,600 tons (31,400 tonnes) June 29; minimum daily, 4.5 tons (4.1 tonnes) Jan. 30.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	540	---	---	---	560	580	480	440	---	530
2	540	---	---	520	---	400	550	---	480	420	---	540
3	560	580	---	---	600	430	560	---	480	---	500	---
4	---	590	570	---	---	460	---	600	480	---	450	560
5	---	---	560	520	---	460	---	600	460	---	450	---
6	550	600	---	---	540	450	580	560	---	490	460	---
7	540	520	---	510	---	---	590	560	---	---	520	---
8	540	---	520	---	---	---	580	---	450	510	---	540
9	540	---	560	550	560	500	---	---	470	520	---	---
10	---	580	560	---	---	---	---	---	---	540	520	510
11	---	---	---	---	---	520	---	580	460	---	580	---
12	---	510	---	550	580	530	510	570	460	---	600	---
13	---	600	---	520	560	---	540	600	---	570	460	---
14	520	580	---	600	---	---	510	---	---	570	515	530
15	525	---	---	650	---	---	510	---	430	530	---	---
16	540	---	---	650	---	550	500	---	380	570	---	520
17	540	540	---	---	560	560	520	---	440	590	590	500
18	---	550	560	---	620	530	---	580	510	---	570	500
19	---	540	545	600	570	---	---	580	530	---	---	---
20	540	570	---	---	580	540	---	590	---	600	560	---
21	540	580	---	590	---	---	540	580	---	610	570	500
22	550	---	530	590	---	---	520	580	540	630	---	---
23	560	---	---	---	600	530	510	---	---	610	---	500
24	540	520	510	---	550	510	---	---	350	580	580	490
25	---	520	---	---	460	540	---	---	---	---	580	470
26	---	560	---	---	400	540	---	480	500	---	---	---
27	560	---	---	---	390	530	540	500	---	590	570	---
28	540	---	---	---	---	---	560	---	---	---	---	480
29	---	---	540	660	---	---	---	500	370	550	---	---
30	580	---	510	---	---	540	560	---	365	550	---	520
31	---	---	510	---	---	520	---	---	---	560	---	---

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	5.0	---	---	---	14.0	14.0	21.0	23.0	---	24.0
2	18.0	---	---	2.0	---	4.0	16.0	---	22.0	26.0	---	23.5
3	15.0	11.0	---	---	1.0	4.0	16.0	---	22.0	---	26.0	---
4	---	10.0	4.0	---	---	4.0	---	---	23.0	---	24.5	24.0
5	---	---	---	2.0	---	4.0	---	16.0	25.0	---	24.5	---
6	20.0	11.5	---	---	2.0	3.0	14.0	16.0	---	28.0	26.0	---
7	18.0	11.0	---	1.0	---	---	14.0	16.0	---	---	---	---
8	---	---	5.0	---	---	---	13.0	---	25.0	30.0	---	23.0
9	18.0	---	3.5	1.0	3.0	5.0	22.0	---	22.0	26.0	22.0	---
10	---	10.0	3.0	---	---	---	---	---	24.5	---	25.5	21.5
11	---	---	---	---	---	7.5	---	17.0	25.5	---	27.0	---
12	---	9.5	---	2.5	4.0	6.5	---	15.0	26.5	---	26.5	---
13	---	10.0	---	3.0	4.0	---	14.0	16.0	---	30.5	26.0	---
14	18.5	8.0	---	3.0	---	---	14.0	---	---	30.0	25.0	24.0
15	17.0	---	---	2.0	---	---	14.0	---	---	28.0	---	---
16	14.0	---	---	2.0	---	17.0	14.0	---	---	28.5	---	20.0
17	15.0	6.0	---	---	8.0	8.0	16.0	---	24.0	29.0	25.0	19.0
18	---	6.0	1.0	---	8.0	7.0	15.0	14.0	25.0	---	25.0	20.5
19	---	6.5	.0	---	10.0	---	15.0	17.0	25.0	---	---	---
20	---	6.5	---	---	7.0	7.0	---	14.0	---	28.5	25.0	---
21	13.0	6.0	---	3.0	---	---	15.0	19.0	---	29.0	26.0	22.5
22	14.5	---	1.5	8.0	---	---	15.0	19.0	26.0	26.0	---	---
23	15.0	---	---	---	2.5	13.0	13.0	---	26.0	26.5	---	20.0
24	---	4.0	.5	---	5.5	11.0	---	---	23.0	28.0	25.0	19.0
25	---	4.5	---	---	4.0	10.0	---	---	---	---	26.0	18.5
26	---	4.0	---	---	3.0	10.0	---	20.0	24.0	---	---	---
27	9.0	---	---	---	4.0	12.0	20.0	22.0	---	---	26.0	---
28	8.5	---	---	---	---	---	15.0	---	---	---	---	18.5
29	---	---	3.0	5.0	---	---	---	21.5	---	24.0	---	---
30	10.0	---	2.0	---	---	14.0	15.0	---	24.0	24.0	---	20.5
31	---	---	2.0	---	---	13.0	---	---	---	22.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	71	161	31	39	22	20	28	17	19	8.4	247	2180
2	64	155	33	49	23	20	44	28	34	15	238	1720
3	58	133	32	48	19	17	94	62	52	22	194	1040
4	55	105	32	47	11	9.6	113	76	49	20	152	542
5	50	78	30	44	9	8.0	112	77	42	17	122	379
6	46	66	27	39	8	7.4	80	54	39	21	103	314
7	50	71	26	38	13	16	40	25	53	94	82	246
8	45	64	26	38	61	145	32	20	76	250	75	223
9	48	68	25	37	38	97	36	19	39	126	56	122
10	46	60	32	47	17	41	29	14	25	80	44	69
11	44	53	33	49	12	28	31	14	30	84	39	66
12	43	45	33	41	10	16	47	20	50	120	35	69
13	42	34	27	26	18	20	33	13	73	149	25	43
14	42	29	23	22	23	28	19	7.7	75	128	20	31
15	42	28	23	22	29	61	24	10	50	55	28	44
16	54	48	22	21	33	106	26	10	46	25	46	72
17	58	85	21	20	17	54	24	9.7	45	36	50	72
18	48	72	23	22	12	38	31	13	28	41	60	81
19	43	59	20	19	13	40	48	20	49	87	81	109
20	39	49	19	18	14	44	54	23	60	118	68	91
21	41	48	28	25	14	43	43	18	62	161	68	82
22	42	36	39	47	21	48	43	18	95	400	75	82
23	43	28	33	40	27	34	45	19	84	422	77	78
24	44	50	28	33	28	23	44	19	56	280	78	46
25	50	71	24	28	28	20	43	19	302	1840	73	40
26	49	69	18	20	29	19	41	18	398	3020	62	34
27	45	60	17	16	30	18	36	16	274	2480	57	31
28	31	37	16	15	30	18	26	12	252	2420	60	32
29	30	36	18	17	29	18	15	6.8	---	---	67	37
30	30	36	19	17	35	22	10	4.5	---	---	64	38
31	30	34	---	---	29	18	12	5.4	---	---	74	57
TOTAL	---	1968	---	944	---	1097.0	---	688.1	---	12519.4	---	8070

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	77	78	81	168	55	74	485	4900	103	531	88	268
2	79	73	79	155	64	87	448	4680	127	700	63	133
3	78	41	78	140	63	86	420	3870	147	885	57	67
4	104	77	77	131	59	80	320	2960	420	2700	56	62
5	100	59	80	135	53	71	230	1780	428	3490	56	62
6	84	45	80	121	55	73	176	1010	372	3040	55	46
7	76	39	79	97	58	77	143	749	225	1630	55	33
8	67	34	81	84	62	80	112	484	143	799	53	32
9	91	83	76	79	84	94	88	278	107	560	65	69
10	150	278	70	71	70	69	89	279	87	392	72	130
11	318	1030	66	67	71	61	104	337	77	264	65	90
12	279	994	65	66	69	58	103	317	75	229	63	66
13	240	1190	57	58	105	99	85	219	78	238	62	48
14	212	1020	73	76	108	98	84	166	159	674	60	30
15	151	701	81	83	280	1200	126	317	203	1080	80	60
16	122	530	78	79	560	2210	124	322	170	845	84	84
17	107	407	73	74	262	1330	108	269	130	523	64	64
18	104	362	68	68	147	647	105	227	109	341	60	62
19	101	300	67	78	109	333	104	217	107	248	59	64
20	97	260	60	79	105	318	103	211	104	153	54	56
21	96	253	60	78	105	318	102	208	103	128	51	50
22	102	247	56	68	105	292	94	191	98	121	48	47
23	112	281	55	64	120	306	96	220	95	111	68	60
24	113	304	61	81	1900	11900	111	330	89	132	70	58
25	109	290	67	94	1000	6990	166	659	74	134	68	82
26	105	262	61	85	430	3750	204	870	75	124	257	1310
27	102	238	53	73	270	2330	164	793	89	135	193	839
28	97	218	53	75	190	1640	154	832	112	233	227	1460
29	92	196	57	79	3130	34600	153	855	155	502	213	1460
30	87	186	56	76	1400	11000	139	717	160	605	176	1070
31	---	---	55	74	---	---	112	575	130	446	---	---
TOTAL	---	10076	---	2756	---	80271	---	29842	---	21993	---	7962

TOTAL LOAD FOR YEAR: 178186.5 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
15...	1000	--	240	39	25	--	--	--	--	99
NOV										
13...	1130	10.0	369	28	28	--	--	--	--	93
FEB										
05...	0930	.0	162	8	3.5	--	--	--	--	59
24...	1425	4.0	1790	360	1740	54	58	62	78	97
MAR										
31...	1015	--	276	69	51	--	--	--	--	95
MAY										
06...	1200	--	627	80	135	--	--	--	--	96
JUN										
09...	0900	22.0	422	86	98	--	--	--	--	99
29...	2045	--	5280	4080	58200	45	49	57	76	100
JUL										
09...	0930	--	1940	91	477	--	--	--	--	99
31...	0900	22.0	1910	115	593	--	--	--	--	97
SEP										
10...	1000	21.5	652	68	120	--	--	--	--	99

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
15...	1000	240	8	--	0	4	46
NOV							
13...	1000	369	8	--	0	5	53
FEB							
24...	1425	1790	2	1	2	10	33
MAR							
31...	1015	276	8	--	0	4	29
MAY							
06...	1200	627	9	--	0	4	43
JUN							
09...	0900	422	9	--	0	5	37
JUL							
09...	0930	1940	8	--	0	6	45
31...	0900	1910	4	--	0	5	38
SEP							
10...	1000	652	8	0	1	7	43

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
15...	87	96	99	99	100	--
NOV						
13...	85	92	97	99	100	--
FEB						
24...	44	52	66	81	93	100
MAR						
31...	58	70	78	86	98	100
MAY						
06...	88	96	98	99	100	--
JUN						
09...	67	75	80	87	98	100
JUL						
09...	84	96	99	100	--	--
31...	70	87	93	96	98	100
SEP						
10...	78	89	93	96	100	--

05455000 RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'50", long 91°30'48", in SE1/4 NW1/4 sec.11, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft (3 m) upstream from bridge on Rochester Avenue, 1.0 mi (1.6 km) northeast of post office in Iowa City and 2.2 mi (3.5 km) upstream from mouth.

DRAINAGE AREA.--3.01 mi² (7.80 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1508: 1933, 1935-37, 1940-41 (M), 1942, 1943 (M), 1948-51, 1952 (P), 1953, 1954 (M), 1955. WDR IOWA 1967: 1965-66; WDR IA-80-1: 1965(M).

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 663.27 ft (202.165 m) NGVD (University of Iowa bench mark).

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--57 years, 1.69 ft³/s (0.048 m³/s), 7.62 in/yr (194 mm/yr), 1,220 acre-ft/yr (1.50 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s (49.8 m³/s) July 17, 1972, gage height, 9.01 ft (2.746 m); maximum gage height, 9.06 ft (2.761 m) July 18, 1966; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 10	2300	*337	9.54	*5.00	1.524	June 29	1815	282	7.99	4.64	1.414
June 15	1245	201	5.69	4.18	1.274						

No flow Feb. 4, 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.11	.12	.16	.05	1.2	.19	.78	.31	2.1	.28	.22
2	.10	.09	.15	.14	.04	.84	.19	.66	.29	1.3	4.3	.20
3	.08	.11	.09	.09	.03	.71	.40	.67	.46	1.1	.86	.21
4	.08	.10	.08	.06	.00	.86	2.4	.74	.26	.93	.56	.15
5	.08	.09	.11	.05	.03	.63	.36	.74	.24	.52	16	.16
6	.09	.12	.40	.07	.03	.49	.29	.48	.24	.42	3.6	.16
7	.06	.16	6.2	.10	.03	.41	.30	.38	.17	.36	2.4	.82
8	.07	.18	6.2	.14	.03	.41	.61	.42	.20	.35	1.5	.24
9	.07	.16	1.5	.08	.02	.51	.48	.45	.23	.33	1.1	.18
10	.08	.12	.86	.05	.02	.40	28	.36	.19	.32	.75	.16
11	.07	.06	.56	.07	.01	.40	15	.34	.14	.37	.60	.14
12	.03	.08	.57	.09	.00	.46	11	.34	.24	.29	.54	.13
13	.05	.12	.39	.10	.00	.43	7.9	.87	.48	.24	.45	.15
14	.06	.17	.34	.07	.00	.37	6.7	.92	.18	.36	18	.11
15	.07	.08	.32	.06	.12	.43	3.9	.51	23	4.3	3.1	.10
16	.83	.32	.31	.04	1.6	.37	3.3	.28	2.1	.47	1.4	.08
17	.21	.10	.30	.05	.60	.36	2.7	.26	.79	.35	1.0	.10
18	.08	.11	.21	.05	.26	.30	2.1	.28	.61	.29	.80	.08
19	.06	.08	.11	.06	.64	.30	2.0	.23	.48	.56	.63	.07
20	.13	.10	.06	.08	1.5	.34	1.7	.20	.42	.64	.51	.27
21	.08	.15	.08	.12	2.9	.35	1.2	.19	.40	.24	.44	.09
22	.10	.14	.10	.17	7.2	.34	2.2	.19	.39	.23	.39	.04
23	.09	.33	.11	.15	13	.26	1.7	.21	.26	.27	.34	.01
24	.65	.14	.08	.15	14	.40	1.1	.34	22	.22	.64	.16
25	.18	.07	.05	.18	6.4	.30	1.0	.22	1.6	3.4	.36	2.2
26	.09	.06	.11	.30	1.9	.26	.92	1.3	1.1	1.6	.33	14
27	.23	.07	.08	.20	4.2	.29	.87	.36	.82	2.3	.30	.86
28	.38	.12	.10	.13	2.2	.28	1.2	.92	.67	1.9	.29	.57
29	.17	.09	.13	.07	---	.39	.98	.69	38	.77	.32	.48
30	.21	.08	.16	.05	---	.35	.87	.26	5.4	.47	.26	.42
31	.13	---	.17	.06	---	.32	---	.23	---	.35	.26	---
TOTAL	4.71	3.71	20.05	3.19	56.81	13.76	101.55	14.72	101.67	27.35	62.31	22.55
MEAN	.15	.12	.65	.10	2.03	.44	3.39	.47	3.39	.88	2.01	.75
MAX	.83	.33	6.2	.30	14	1.2	28	1.3	38	4.3	18	14
MIN	.03	.06	.05	.04	.00	.26	.19	.19	.14	.22	.26	.01
CFSM	.05	.04	.22	.03	.67	.15	1.13	.16	1.13	.29	.67	.25
IN.	.06	.05	.25	.04	.70	.17	1.25	.18	1.26	.34	.77	.28
AC-FT	9.3	7.4	40	6.3	113	27	201	29	202	54	124	45

CAL YR 1980 TOTAL 336.24 MEAN .92 MAX 17 MIN .00 CFSM .31 IN 4.15 AC-FT 667
WTR YR 1981 TOTAL 432.38 MEAN 1.18 MAX 38 MIN .00 CFSM .39 IN 5.34 AC-FT 858

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	0.68	0.98	0.53	1.2	2.6	3.3	2.2	2.0	2.4	1.7	0.57	1.1	1.6
RUNOFF (INCHES)	0.26	0.36	0.20	0.46	0.90	1.26	0.82	0.77	0.89	0.65	0.27	0.40	7.22
STD. DEVIATION	0.42	0.77	0.25	0.58	0.90	1.18	0.63	0.62	0.82	0.92	0.31	0.78	4.11
PERCENT OF ANNUAL	3.6	5.0	2.8	6.4	12	18	11	11	12	9.0	3.0	5.7	----
PRECIP. (INCHES)	2.5	1.9	1.4	1.2	1.0	2.2	3.4	3.8	4.8	4.4	2.9	3.5	32.8

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1952 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1968 to current year.
WATER TEMPERATURES: October 1960 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1952 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 8,000 micromhos Dec. 24, 1973; minimum daily, 120 micromhos May 19, 20, 1977.
WATER TEMPERATURES: Maximum daily, 31.0°C July 21, 1968; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,300 mg/L Aug. 20, 1975; minimum daily mean, 0 mg/L on many days in 1953-59, 1963-68, 1971, 1975-77, 1980-81.
SEDIMENT LOADS: Maximum daily, 4,300 tons (3,900 tonnes) May 23, 1966; minimum daily, 0 ton (0 tonne) on many days most years.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 1,400 micromhos Feb. 6; minimum daily, 185 micromhos June 15.
WATER TEMPERATURES: Maximum daily, 29.0°C July 1; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,660 mg/L June 29; minimum daily mean, 0 mg/L on Feb. 12-14.
SEDIMENT LOADS: Maximum daily, 2,520 tons (2,290 tonnes) June 29; minimum daily, 0 ton (0 tonne) Oct. 12-14, 18-21, 26, Nov. 25-27, 30, Dec. 4. Feb. 3-14, Sept. 10,15,22,23.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	490	540	490	480	490	560	480	480	460	480	320	460
2	520	520	500	460	520	540	460	460	460	470	440	460
3	520	490	600	550	490	550	460	460	460	470	560	460
4	510	480	700	490	520	590	530	440	470	490	520	460
5	510	480	580	510	500	520	570	460	470	480	390	560
6	540	490	510	500	1400	500	540	460	490	470	490	460
7	550	480	540	520	1200	480	530	460	480	470	510	480
8	540	480	490	510	570	530	500	470	480	460	490	510
9	520	460	560	510	550	510	480	460	520	475	480	540
10	560	480	510	520	530	560	490	450	520	380	460	540
11	590	470	500	520	510	510	530	450	530	360	450	500
12	600	460	500	510	700	520	580	440	480	500	450	480
13	640	460	480	500	560	530	560	460	500	510	440	470
14	605	470	480	510	540	520	520	460	520	550	435	470
15	580	500	480	510	640	480	480	460	185	460	550	480
16	400	500	480	540	460	490	470	460	560	460	500	480
17	600	500	480	540	380	500	460	470	520	570	480	480
18	600	500	480	520	510	500	460	460	500	570	460	480
19	600	520	520	490	460	540	470	520	500	370	460	480
20	620	520	500	470	490	510	450	500	500	550	450	480
21	570	540	560	470	550	480	440	480	500	540	460	480
22	560	500	570	490	420	520	370	460	500	530	450	480
23	540	350	560	460	540	520	470	450	490	430	450	480
24	520	460	530	460	330	540	460	450	420	460	460	500
25	620	480	520	450	560	520	460	470	520	520	460	440
26	615	500	550	480	540	560	450	260	520	490	450	330
27	610	500	520	460	550	520	450	450	510	560	450	580
28	560	500	500	490	600	580	500	470	510	520	460	540
29	560	500	490	490	---	520	460	500	385	560	460	520
30	550	480	480	490	---	530	460	510	375	490	460	520
31	540	---	480	480	---	480	---	460	---	500	460	---

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	4.0	3.0	.0	.0	5.0	10.0	10.0	18.0	29.0	22.0	20.0
2	13.0	2.0	.0	.0	.0	3.0	13.0	13.0	18.0	26.0	23.0	17.0
3	11.0	9.0	.0	.0	1.0	4.0	12.0	12.0	19.0	23.0	24.0	18.0
4	9.0	7.0	.0	.0	.0	3.0	9.0	15.0	19.0	22.0	25.0	17.0
5	7.0	7.0	3.0	.0	1.0	6.0	10.0	14.0	21.0	22.0	25.0	17.0
6	13.0	3.0	3.0	1.0	.0	4.0	9.0	10.0	23.0	24.0	21.0	16.0
7	14.0	10.0	2.0	.0	.0	4.0	10.0	9.0	20.0	24.0	22.0	16.0
8	15.0	10.0	3.0	.0	1.0	5.0	12.0	11.0	20.0	25.0	22.0	17.0
9	14.0	10.0	2.0	.0	.0	6.0	15.0	12.0	19.0	25.0	22.0	17.0
10	14.0	10.0	.0	.0	.0	3.0	10.0	12.0	19.0	24.0	21.0	17.0
11	10.0	7.0	.0	.0	.0	7.0	14.0	13.0	19.0	24.0	21.0	17.0
12	7.0	8.0	2.0	.0	1.0	9.0	12.0	12.0	23.0	24.0	23.0	18.0
13	10.0	8.0	.0	.0	1.0	9.0	14.0	12.0	24.0	27.0	22.0	17.0
14	14.0	5.0	2.0	.0	1.0	9.0	12.0	11.0	25.0	27.0	21.0	19.0
15	10.0	5.0	1.0	.0	1.0	9.0	12.0	17.0	23.5	24.0	22.0	15.5
16	12.5	5.0	.0	.0	2.0	9.0	12.0	12.0	18.0	24.0	22.0	16.0
17	13.0	2.0	1.0	.0	1.0	4.0	17.0	14.0	20.0	23.0	23.0	15.0
18	10.0	2.0	.0	1.0	2.0	7.5	12.0	10.0	23.0	23.0	20.0	14.0
19	7.0	3.0	.0	2.0	1.0	7.0	11.0	15.0	20.0	24.0	19.0	16.0
20	13.0	2.0	.0	1.0	1.0	9.0	8.0	18.0	19.0	24.0	18.0	18.0
21	11.0	3.0	.0	1.0	3.0	8.0	6.0	19.0	20.0	23.0	17.0	15.0
22	10.0	4.0	.0	1.0	3.0	11.0	15.0	19.0	19.0	21.0	20.0	16.0
23	10.0	4.0	.0	1.0	1.0	11.5	10.0	17.0	22.0	21.0	20.0	15.0
24	8.0	2.0	.0	1.0	2.0	13.0	12.0	15.0	19.0	22.0	18.0	16.0
25	5.0	.0	.0	2.0	5.0	10.0	14.0	17.0	20.0	19.0	22.0	15.0
26	7.0	.0	.0	2.0	2.0	7.0	20.0	18.0	23.0	19.0	22.0	17.0
27	4.0	1.0	.0	2.0	5.0	13.0	14.0	20.0	22.0	19.0	22.0	16.0
28	3.0	.0	2.0	.0	4.0	10.0	16.0	21.0	20.0	16.0	20.0	14.0
29	3.0	1.0	2.0	.0	---	15.0	12.0	22.0	21.5	17.0	20.0	17.0
30	7.0	2.0	.0	.0	---	14.0	11.0	20.0	28.0	20.0	18.0	19.0
31	7.0	---	.0	.0	---	15.0	---	18.0	---	22.0	19.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	69	.02	49	.01	34	.01	106	.05	124	.02	78	.25
2	77	.02	50	.01	69	.03	123	.05	120	.01	77	.17
3	75	.02	61	.02	65	.02	157	.04	107	.00	65	.12
4	78	.02	51	.01	43	.00	155	.03	126	.00	45	.10
5	75	.02	46	.01	39	.01	183	.02	116	.00	60	.10
6	68	.02	80	.03	41	.04	180	.03	103	.00	46	.06
7	60	.00	65	.03	181	3.0	147	.04	93	.00	44	.05
8	69	.01	37	.02	150	3.0	165	.06	118	.00	52	.06
9	63	.01	68	.03	48	.19	152	.03	134	.00	67	.09
10	66	.01	89	.03	46	.11	182	.02	108	.00	69	.07
11	59	.01	66	.01	42	.06	170	.03	85	.00	72	.08
12	52	.00	61	.01	96	.15	176	.04	0	.00	92	.11
13	51	.00	53	.02	203	.21	200	.05	0	.00	91	.11
14	46	.00	58	.03	191	.18	200	.04	0	.00	68	.07
15	70	.01	58	.01	191	.17	195	.03	39	.01	47	.05
16	292	.81	73	.06	154	.16	154	.02	90	.39	52	.05
17	82	.05	48	.01	188	.15	120	.02	56	.09	69	.07
18	35	.00	58	.02	195	.11	130	.02	54	.04	51	.04
19	28	.00	50	.01	231	.07	109	.02	52	.09	38	.03
20	23	.00	54	.01	247	.04	92	.02	59	.24	35	.03
21	24	.00	50	.02	212	.05	58	.02	230	1.8	38	.04
22	45	.01	61	.02	216	.06	73	.03	970	19	35	.03
23	59	.01	34	.03	192	.06	72	.03	415	15	30	.02
24	65	.11	35	.01	185	.04	102	.04	3900	147	52	.06
25	33	.01	44	.00	111	.01	92	.04	880	15	35	.03
26	19	.00	59	.00	159	.05	83	.07	84	.43	21	.01
27	36	.02	48	.00	161	.03	78	.04	120	1.4	17	.01
28	51	.05	39	.01	110	.03	64	.02	77	.46	22	.02
29	52	.02	48	.01	76	.03	87	.02	---	---	25	.03
30	40	.02	33	.00	87	.04	108	.01	---	---	40	.04
31	48	.02	---	---	72	.03	119	.02	---	---	39	.03
TOTAL	---	1.30	---	0.49	---	8.14	---	1.00	---	200.98	---	2.03

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	82	.03	69	.15	128	.11	105	.60	52	.04	68	.04
2	42	.02	89	.16	129	.10	89	.31	587	13	91	.05
3	96	.10	83	.13	77	.10	83	.25	380	.88	63	.04
4	336	2.6	82	.16	62	.04	143	.36	165	.25	47	.02
5	116	.11	84	.17	70	.05	107	.15	578	81	24	.01
6	61	.08	102	.13	76	.05	117	.13	100	.97	36	.02
7	87	.07	114	.12	68	.03	129	.13	150	.97	377	.83
8	129	.21	118	.13	68	.04	116	.11	114	.46	67	.04
9	110	.14	107	.13	55	.03	91	.08	143	.42	25	.01
10	3020	1470	103	.10	62	.03	35	.03	130	.26	12	.00
11	2300	263	81	.07	60	.02	42	.04	114	.18	38	.01
12	480	14	100	.09	58	.04	50	.04	71	.10	82	.02
13	281	5.4	80	.19	39	.05	50	.03	58	.07	47	.02
14	132	2.4	70	.17	40	.02	63	.05	3080	355	37	.01
15	102	1.1	91	.13	4770	1090	1010	26	330	2.8	28	.00
16	93	.83	83	.06	124	.70	95	.12	223	.84	72	.02
17	86	.62	82	.06	129	.28	63	.06	121	.33	90	.02
18	60	.34	80	.06	143	.24	37	.03	98	.21	88	.02
19	93	.50	51	.03	131	.17	109	.16	71	.12	67	.01
20	121	.56	55	.03	127	.14	53	.09	93	.13	71	.05
21	121	.39	96	.05	103	.11	45	.03	100	.12	85	.02
22	485	2.9	87	.04	108	.11	57	.04	67	.07	42	.00
23	155	.71	84	.05	98	.07	97	.07	78	.07	43	.00
24	109	.32	72	.07	3650	790	104	.06	77	.13	145	.06
25	104	.28	106	.06	131	.57	400	12	67	.07	270	1.6
26	80	.20	271	2.0	116	.34	232	1.0	50	.04	929	86
27	68	.16	96	.09	94	.21	153	.95	51	.04	31	.07
28	104	.34	206	1.2	103	.19	118	.61	60	.05	57	.10
29	85	.22	68	.13	5660	2520	85	.18	58	.05	60	.08
30	78	.18	70	.05	290	4.2	59	.09	100	.07	68	.07
31	---	---	112	.07	---	---	61	.06	70	.05	---	---
TOTAL	---	1767.78	---	6.08	---	4408.04	---	43.87	---	428.79	---	89.24

TOTAL LOAD FOR YEAR: 6987.74 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
FEB							
24...	1730	2.0	55	7810	1160	32	36
JUN							
15...	1300	23.5	201	23100	12500	40	45
29...	1600	22.0	26	13100	920	30	33
JUL							
15...	0800	--	6.3	2100	36	87	81
AUG							
14...	0630	21.0	113	7690	2350	28	30

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB						
24...	40	55	--	--	--	98
JUN						
15...	65	75	--	--	--	98
29...	36	53	99	99	100	--
JUL						
15...	97	99	--	--	--	100
AUG						
14...	32	49	97	99	100	--

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW1/4 NE1/4 sec.14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft (18 m) downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi (1.9 km) upstream from mouth.

DRAINAGE AREA.--2.94 mi² (7.61 km²).

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR IOWA 1966: Drainage area.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft (206.664 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years, 2.42 ft³/s (0.069 m³/s), 11.18 in/yr (284 mm/yr), 1,750 acre-ft/yr (2.16 hm³/yr); median of yearly mean discharges, 2.1 ft³/s (0.06 m³/s), 9.7 in/yr (250 mm/yr), 1,500 acre-ft/yr (1.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,070 ft³/s (30.3 m³/s) July 17, 1972, gage height, 9.47 ft (2.886 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft (3.20 m), from flood profile, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 10	2115	351	9.9	6.32	1.926	June 29	1735	250	7.1	5.36	1.634
June 15	1115	*385	11	*6.58	2.006	Sept 26	0705	212	6.0	4.95	1.509
June 24	0110	343	9.7	6.25	1.905						

No flow Feb. 4,5,9-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.34	.64	.35	.14	.94	.21	.86	.22	1.6	.27	.52
2	.11	.26	.26	.27	.03	1.0	.33	.79	.24	1.2	6.9	.29
3	.10	.29	.17	.22	.01	.86	2.5	.72	.29	1.1	1.1	.18
4	.09	.27	.28	.16	.00	1.0	2.5	2.7	.17	3.1	.60	.13
5	.09	.26	.45	.14	.00	.79	.25	.79	.16	.79	41	.12
6	.09	.27	1.6	.17	.01	.66	.25	.60	.14	.60	4.7	.11
7	.09	.27	9.4	.25	.02	.56	.25	.56	.18	.48	2.5	3.4
8	.07	.28	7.9	.21	.01	.56	1.5	.56	.19	.45	1.6	.17
9	.07	.28	2.0	.16	.00	.52	.29	.56	.33	.33	1.0	.11
10	.06	.24	1.2	.12	.00	.48	54	.52	.13	.27	.72	.09
11	.04	.23	.94	.14	.00	.48	31	.48	.10	.41	.56	.08
12	.06	.31	.92	.16	.00	.52	19	.48	1.9	.25	.52	.08
13	.05	.53	.79	.18	.01	.48	15	.72	.60	.48	.41	.08
14	.18	.37	.74	.14	.05	.45	8.8	2.7	.11	1.0	32	.07
15	.20	.23	.71	.11	.20	.48	4.2	.45	56	6.9	2.5	.07
16	3.4	.23	.67	.10	1.5	.41	3.1	.45	3.1	.48	1.2	.11
17	.28	.23	.63	.11	.88	.41	2.5	.41	1.1	.36	.94	.07
18	.17	.22	.56	.12	.56	.36	1.7	.41	.79	.31	.79	.07
19	.16	.20	.39	.14	.32	.38	1.6	.36	.60	4.2	.66	.07
20	.23	.21	.28	.18	.30	.36	1.2	.31	.41	1.0	.56	.05
21	.32	.21	.26	.22	.40	.36	1.1	.29	.38	.38	.45	.04
22	.30	.41	.34	.17	1.5	.36	3.9	.29	.33	.33	.41	.04
23	.24	1.1	.48	.16	5.0	.33	1.3	.31	.22	.94	.36	.03
24	2.4	.23	.37	.17	8.6	.33	1.1	2.3	57	.29	1.3	1.9
25	.28	.19	.31	.23	2.5	.31	1.1	.24	2.1	1.9	.38	4.7
26	.28	.20	.34	.30	1.3	.33	1.0	6.5	1.1	1.9	.41	47
27	1.1	.36	.24	.22	3.0	.27	.79	.56	.86	3.4	.41	1.9
28	1.4	.24	.25	.13	1.3	.27	2.5	3.1	.72	2.7	.36	1.0
29	.38	.22	.27	.12	---	.45	1.3	.56	44	.66	.36	.86
30	.84	.20	.31	.13	---	.25	.66	.33	4.4	.48	.31	.72
31	.44	---	.36	.15	---	.24	---	.27	---	.36	.33	---
TOTAL	13.67	8.88	34.03	5.43	27.74	15.20	165.13	30.18	179.87	38.65	105.61	64.06
MEAN	.44	.30	1.10	.18	.99	.49	5.50	.97	6.00	1.25	3.41	2.14
MAX	3.4	1.1	9.4	.35	8.6	1.0	54	6.5	58	6.9	41	47
MIN	.04	.19	.17	.10	.00	.24	.21	.24	.10	.25	.27	.03
CFSM	.15	.10	.37	.06	.34	.17	1.87	.33	2.04	.43	1.16	.73
IN.	.17	.11	.43	.07	.35	.19	2.09	.38	2.23	.49	1.34	.81
AC-FT	27	18	67	11	55	30	328	60	357	77	209	127

CAL YR 1980 TOTAL 400.20 MEAN 1.09 MAX 33 MIN .00 CFSM .37 IN 5.06 AC-FT 794
WTR YR 1981 TOTAL 688.45 MEAN 1.89 MAX 58 MIN .00 CFSM .64 IN 8.71 AC-FT 1370

05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°27'59", long 91°42'56", in SE1/4 SE1/4 sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) upstream from bridge on State Highway 1, 0.8 mi (1.3 km) south of Kalona, 1.1 mi (1.8 km) upstream from Camp Creek, 4.5 mi (7.2 km) downstream from Smith Creek, and 14.5 mi (23.3 km) upstream from mouth.

DRAINAGE AREA.--573 mi² (1,484 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1940 (M), 1941. WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage recorder. Datum of gage is 633.45 ft (193.076 m) NGVD (levels by Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft (9 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--42 years, 359 ft³/s (10.17 m³/s), 8.51 in/yr (216 mm/yr), 260,100 acre-ft/yr (321 hm³/yr); median of yearly mean discharges, 330 ft³/s (9.35 m³/s), 7.8 in/yr (198 mm/yr), 239,000 acre-ft/yr (295 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/s) Sept. 21, 1965, gage height, 21.45 ft (6.538 m); minimum daily, 0.66 ft³/s (0.019 m³/s) Feb. 5-7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft (6.07 m) from floodmark, from information by local residents, discharge, 18,500 ft³/s (524 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,550 ft³/s (101 m³/s) June 25, gage height, 12.12 ft (3.694 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 6.2 ft³/s (0.18 m³/s) June 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	52	33	57	20	551	61	194	21	688	30	123
2	33	58	33	54	19	378	50	159	18	293	36	120
3	31	64	37	48	17	288	45	142	18	222	159	71
4	29	66	40	39	15	254	77	132	18	472	162	46
5	27	57	27	35	15	246	182	136	16	478	724	36
6	26	50	33	34	16	214	150	140	13	263	611	31
7	26	47	136	35	17	184	109	115	10	189	246	43
8	25	46	1480	36	18	167	102	102	8.4	151	142	130
9	23	42	1020	35	18	160	100	100	8.4	129	108	111
10	22	37	512	33	17	155	99	100	8.4	106	88	66
11	21	31	345	32	16	148	109	92	6.9	76	72	44
12	20	29	275	32	16	143	649	85	6.2	45	62	33
13	19	31	180	31	16	140	618	80	6.2	26	55	29
14	15	39	165	34	17	129	774	92	6.2	22	67	25
15	15	40	155	34	21	122	605	100	193	66	117	19
16	21	39	145	33	36	119	433	87	272	125	89	18
17	57	37	130	29	80	112	366	69	129	36	60	16
18	46	36	115	29	110	106	304	60	79	27	48	15
19	45	32	105	31	90	97	250	56	44	83	42	14
20	33	29	100	32	74	89	222	52	28	219	39	13
21	27	31	89	33	64	86	198	48	21	81	35	13
22	22	28	88	34	88	84	195	43	22	46	33	14
23	18	31	83	33	270	81	260	43	18	35	31	12
24	22	38	74	32	540	76	261	66	2090	29	31	13
25	43	37	69	34	1700	74	205	52	2890	23	34	37
26	49	34	64	35	1790	75	182	61	911	25	34	743
27	44	36	63	34	1050	75	168	72	443	62	33	497
28	47	34	62	28	975	70	158	40	302	95	33	171
29	48	36	61	24	---	70	187	36	294	106	53	105
30	48	36	60	22	---	71	299	31	1220	76	91	82
31	49	---	59	20	---	68	---	26	---	45	63	---
TOTAL	986	1203	5838	1052	7125	4632	7418	2611	9120.7	4339	3428	2690
MEAN	31.8	40.1	188	33.9	254	149	247	84.2	304	140	111	89.7
MAX	57	66	1480	57	1790	551	774	194	2890	688	724	743
MIN	15	28	27	20	15	68	45	26	6.2	22	30	12
CFSM	.06	.07	.33	.06	.44	.26	.43	.15	.53	.24	.19	.16
IN.	.06	.08	.38	.07	.46	.30	.48	.17	.59	.28	.22	.17
AC-FT	1960	2390	11580	2090	14130	9190	14710	5180	18090	8610	6800	5340

CAL YR 1980 TOTAL 37907.5 MEAN 104 MAX 1480 MIN 7.4 CFSM .18 IN 2.46 AC-FT 75190
WTR YR 1981 TOTAL 50442.7 MEAN 138 MAX 2890 MIN 6.2 CFSM .24 IN 3.27 AC-FT 100100

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	0.68	0.98	0.53	1.2	2.6	3.3	2.2	2.0	2.4	1.7	0.57	1.1	1.6
RUNOFF (INCHES)	0.26	0.36	0.20	0.46	0.90	1.26	0.82	0.77	0.89	0.65	0.27	0.40	7.22
STD. DEVIATION	0.42	0.77	0.25	0.58	0.90	1.18	0.63	0.62	0.82	0.92	0.31	0.78	4.11
PERCENT OF ANNUAL	3.6	5.0	2.8	6.4	12	18	11	11	12	9.0	3.0	5.7	----
PRECIP. (INCHES)	2.5	1.9	1.4	1.2	1.0	2.2	3.4	3.8	4.8	4.4	2.9	3.5	32.8

05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat 41°25'15", long 91°28'25", in NW1/4 NE1/4 sec.6, T.76 N., R.5 W., Louisa County, Hydrologic Unit 07080209, on left bank 2,000 ft ,revised,(610 m) downstream from new tri-county bridge on county highway W66, 5 mi (8.0 km) southwest of Lone Tree, 6.2 mi (10.0 km) downstream from English River, and at mile 47.2 (75.9 km).

DRAINAGE AREA.--4,293 mi² (11,118 km²).

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.16 ft (179.271 m) NGVD. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 36.1 mi (58.1 km) upstream since Sept. 17, 1958. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--25 years, 2,668 ft³/s (75.56 m³/s), 8.44 in/yr (214 mm/yr), 1,933,000 acre-ft/yr (2,380 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,700 ft³/s (110 m³/s) May 19, 1974, gage height, 18.97 ft (5.782 m); maximum gage height, 20.27 ft (6.178 m) Sept. 22, 1965; minimum daily discharge, 69 ft³/s (1.95 m³/s) Aug. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1944, reached a stage of 19.94 ft (6.078 m), discharge not determined, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,640 ft³/s (188 m³/s) June 30, gage height, 10.26 ft (3.127 m); minimum daily, 190 ft³/s (5.38 m³/s) Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	825	519	401	280	220	4210	380	1200	665	4600	2010	1260
2	874	580	386	305	230	3490	408	1050	652	4570	2060	1250
3	889	614	396	380	230	2690	396	953	643	3980	2440	778
4	891	610	406	390	220	1950	347	898	640	3830	2650	569
5	773	597	372	390	215	1550	407	881	627	4170	3080	519
6	701	591	386	380	230	1430	436	854	623	2990	5770	499
7	666	589	519	375	270	1350	423	763	617	2450	3960	390
8	560	586	2080	370	1000	1290	399	655	608	2300	2910	378
9	648	581	2590	365	1400	1250	384	620	598	1720	2340	437
10	637	577	1710	355	1450	920	410	614	563	1540	2180	603
11	593	571	1360	300	1250	823	1190	592	497	1520	1720	712
12	550	566	1240	280	960	876	2240	574	446	1510	1380	529
13	474	475	888	280	900	904	2890	575	434	1410	1310	454
14	372	439	780	250	760	801	3400	595	441	1150	1470	338
15	363	431	774	230	720	765	2720	612	943	1280	2180	272
16	360	427	1140	210	540	757	2350	576	2830	1350	2240	371
17	498	424	1290	190	250	749	2030	557	2080	1310	1880	424
18	625	417	1280	205	350	704	1840	552	2090	1170	1450	421
19	608	416	1230	210	620	668	1600	530	1530	1110	1260	435
20	557	415	1200	215	700	655	1380	589	1320	1080	878	439
21	530	420	1200	210	840	644	1280	605	1300	1030	684	416
22	472	456	1000	225	1250	605	1260	598	1290	1000	619	406
23	367	642	700	230	2410	568	1230	567	1220	986	600	398
24	339	514	450	230	2550	519	1350	579	3890	1000	563	372
25	530	498	390	235	3840	400	1290	633	6450	1420	707	588
26	524	482	360	230	4630	374	1240	644	5280	1650	747	2480
27	585	461	320	225	4690	371	1140	705	4040	1890	684	3440
28	569	421	300	220	4770	361	1130	669	3710	2110	738	2530
29	541	411	290	210	---	354	1100	760	3620	2250	986	2930
30	541	401	280	205	---	357	1190	953	5640	2130	1360	2610
31	535	---	280	210	---	362	---	693	---	2040	1460	---
TOTAL	18067	15131	25998	8390	37595	32747	37840	21646	55277	62546	54316	27248
MEAN	583	504	839	271	1343	1056	1261	698	1843	2018	1752	908
MAX	891	642	2590	390	4770	4210	3400	1200	6450	4600	5770	3440
MIN	339	401	280	190	215	354	347	530	434	986	563	272
AC-FT	35880	30010	51570	16640	74570	64950	75060	42930	109600	124100	107700	54050

CAL YR 1980 TOTAL 517642 MEAN 1414 MAX 5350 MIN 280 AC-FT 1027000
WTR YR 1981 TOTAL 396821 MEAN 1087 MAX 6450 MIN 190 AC-FT 787100

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE1/4 NE1/4, sec.12, T.95 N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft (244 m) downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi (17.1 km) upstream from Gizzard Creek, and at mile 252.9 (406.9 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,054 mi^2 (2,730 km^2).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 973.02 ft (296.576 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation by dam 0.2 mi (0.3 km) above gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945, to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi (0.3 km) upstream. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--17 years, 669 ft^3/s (18.95 m^3/s), 8.62 in/yr (219 mm/yr), 484,700 acre-ft/yr (598 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft^3/s (595 m^3/s) Apr. 7, 1965, gage height, 19.14 ft (5.834 m); maximum gage height, 21.64 ft (6.596 m) Mar. 2, 1965, backwater from ice; minimum daily discharge, 60 ft^3/s (1.70 m^3/s) Nov. 23, 1977, Jan. 7, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft (6.58 m), from floodmarks, discharge, 29,200 ft^3/s (827 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft^3/s (102 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage Height (ft)	Gage Height (m)
Apr. 29	0545	4,770	135	7.95	2.423
June 24	2345	3,810	108	6.90	2.103
July 18	0545	*7,930	225	*10.86	3.310
Aug. 29	0845	3,730	106	6.81	2.076

Minimum daily discharge, 140 ft^3/s (3.96 m^3/s) Feb. 11-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	833	568	366	260	170	795	434	1320	789	1310	790	2090
2	780	564	171	260	162	625	434	1050	679	1360	1960	1490
3	727	556	246	238	160	486	489	888	690	991	1530	1340
4	686	502	301	220	150	433	767	856	603	791	1140	1190
5	651	516	417	230	142	395	736	1250	545	680	1070	1060
6	651	506	406	232	142	366	743	1440	500	609	1000	960
7	934	502	402	218	145	334	667	1270	461	550	1010	1050
8	686	493	395	208	145	317	671	1080	443	505	1050	1060
9	582	485	317	198	145	308	601	933	436	466	1010	1050
10	576	465	284	188	145	303	579	820	440	431	910	824
11	523	446	208	188	140	300	609	734	423	468	781	754
12	500	440	299	190	140	300	569	673	426	1580	698	694
13	482	449	290	190	140	307	532	657	1730	3380	638	662
14	476	451	294	192	148	321	492	649	1160	2730	660	623
15	474	441	300	196	180	353	459	618	1040	2160	1290	597
16	548	430	320	198	250	357	439	580	1030	4540	1240	558
17	687	422	330	195	324	357	434	542	831	5640	1120	506
18	656	412	280	190	455	340	421	506	712	6120	931	480
19	638	408	210	206	596	323	439	486	627	2530	774	367
20	609	404	242	205	604	301	450	464	601	2380	677	340
21	574	402	260	205	528	285	461	447	586	1980	613	346
22	551	393	260	210	467	282	494	434	544	1380	562	345
23	546	392	255	210	473	278	525	469	714	1340	525	351
24	889	384	240	210	498	273	528	1310	3440	1580	496	371
25	883	370	230	214	504	273	507	1590	2460	1490	482	404
26	891	356	225	229	488	278	482	1070	1570	1280	1040	435
27	846	361	228	230	586	277	463	864	1140	1020	3400	443
28	732	372	228	220	1150	277	1600	780	903	1080	3200	437
29	514	360	230	200	---	295	3750	1080	795	971	3650	412
30	495	360	240	190	---	336	1750	970	777	882	3080	405
31	508	---	254	180	---	386	---	833	---	798	2380	---
TOTAL	20128	13210	8728	6500	9177	10861	21525	26663	27095	53022	39705	21633
MEAN	649	440	282	210	328	350	718	860	903	1710	1281	721
MAX	934	568	417	260	1150	795	3750	1590	3440	6120	3650	2090
MIN	474	356	171	180	140	273	421	434	423	431	482	340
CFSM	.62	.42	.27	.20	.31	.33	.68	.82	.86	1.62	1.22	.68
IN.	.71	.47	.31	.23	.32	.38	.76	.94	.96	1.87	1.40	.76
AC-FT	39920	26200	17310	12890	18200	21540	42690	52890	53740	105200	78750	42910

CAL YR 1980 TOTAL 310573 MEAN 849 MAX 8600 MIN 171 CFSM .81 IN 10.96 AC-FT 616000
WTR YR 1981 TOTAL 258247 MEAN 708 MAX 6120 MIN 140 CFSM .67 IN 9.11 AC-FT 512200

05458000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in SW1/4 NE1/4 sec.21, T.95 N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft (4 m) downstream from bridge on county highway B57, 2.4 mi (3.9 km) west of Ionia, 6.4 mi (10.3 km) upstream from mouth, and 7.6 mi (12.2 km) downstream from Beaver Creek.

DRAINAGE AREA.--306 mi² (793 km²).

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage recorder. Datum of gage is 973.35 ft (296.677 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--27 years, 160 ft³/s (4.531 m³/s), 7.10 in/yr (180 mm/yr), 115,900 acre-ft/yr (143 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 6.2 in/yr (157 mm/yr), 101,000 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Mar. 27, 1961, gage height, 15.58 ft (4.749 m); minimum daily, 3.0 ft³/s (0.085 m³/s) Feb. 4-9, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.37 ft (3.466 m), discharge, 4,600 ft³/s (130 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
July 13	unknown	1,250	35.4	6.84	2.085	July 20	0715	1.860	52.7	7.86	2.396
July 18	1115	1,920	54.4	7.96	2.426	Aug. 28	1345	*2,350	66.6	*8.65	2.636
July 19	0115	1,740	49.3	7.67	2.338						

Minimum daily discharge, 30 ft³/s (0.85 m³/s) Feb. 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	184	90	58	41	474	122	350	176	165	157	681
2	203	174	37	59	39	390	119	282	156	153	453	438
3	190	166	63	53	38	242	135	240	141	137	386	339
4	180	161	81	49	34	197	536	242	129	123	361	281
5	169	153	90	45	33	161	432	315	117	116	287	246
6	160	151	96	45	32	133	306	302	108	108	240	218
7	152	149	108	43	33	108	249	258	103	100	202	207
8	145	145	100	41	33	108	282	223	99	93	176	202
9	138	141	91	40	32	102	239	201	97	87	157	198
10	130	131	73	38	32	99	263	185	95	82	141	186
11	122	123	59	37	31	99	233	169	92	112	128	167
12	117	120	96	37	31	98	227	155	90	700	120	153
13	113	121	87	37	30	101	235	149	830	840	112	139
14	110	121	82	38	30	111	204	153	496	490	127	129
15	111	118	84	38	33	117	168	147	519	680	169	119
16	125	116	84	39	54	102	157	137	340	698	242	112
17	184	114	81	38	91	99	153	127	267	729	180	106
18	197	111	77	37	151	94	142	120	214	1470	149	102
19	169	108	46	38	155	85	143	114	195	746	130	98
20	157	108	58	38	145	79	150	109	227	1070	118	96
21	146	106	60	38	135	75	150	105	191	535	109	93
22	137	103	57	39	121	73	157	100	173	339	102	90
23	134	103	57	40	157	72	175	106	261	339	97	87
24	339	100	57	41	131	71	175	229	926	307	92	85
25	504	91	51	43	175	71	161	616	424	285	89	85
26	372	87	50	47	203	72	147	366	290	283	202	89
27	298	99	50	48	218	72	135	259	232	214	1320	109
28	259	94	50	48	824	72	238	231	201	281	2050	99
29	230	96	52	45	---	80	625	304	185	213	914	92
30	211	93	54	42	---	97	415	219	171	187	729	90
31	198	---	57	42	---	114	---	201	---	166	574	---
TOTAL	5920	3689	2178	1321	3062	3868	6873	6714	7545	11848	10313	5136
MEAN	191	123	70.3	42.6	109	125	229	217	252	382	333	171
MAX	504	184	108	59	824	474	625	616	926	1470	2050	681
MIN	110	87	37	37	30	71	119	100	90	82	89	85
CFSM	.62	.40	.23	.14	.36	.41	.75	.71	.82	1.25	1.09	.56
IN.	.72	.45	.26	.16	.37	.47	.84	.82	.92	1.44	1.25	.62
AC-FT	11740	7320	4320	2620	6070	7670	13630	13320	14970	23500	20460	10190

CAL YR 1980 TOTAL 106647 MEAN 291 MAX 4720 MIN 26 CFSM .95 IN 12.96 AC-FT 211500
WTR YR 1981 TOTAL 68467 MEAN 188 MAX 2050 MIN 30 CFSM .61 IN 8.32 AC-FT 135800

05458500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE1/4 SW1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft (91 m) downstream from bridge on county highway at Janesville, 3.6 mi (5.8 km) upstream from West Fork Cedar River, and at mile 207.7 (334.2 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi^2 (4,302 km^2).

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Red Cedar River at Janesville, 1905-6.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1906 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M).

GAGE.--Water-stage recorder. Datum of gage is 868.26 ft (264.646 m) NGVD. Prior to July 26, 1919, nonrecording gage at site 1,000 ft (305 m) downstream at datum 4.0 ft (1.2 m) lower. July 26, 1919, to Sept. 30, 1927, Nov. 14, 1932, to Sept. 30, 1942, and Apr. 26, 1946, to Nov. 10, 1949, nonrecording gage at county bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi (16.1 km) upstream. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--61 years (1904-6, 1914-27, 1932-42, 1945-81), 806 ft^3/s (22.83 m^3/s), 6.59 in/yr (167 mm/yr), 583,900 acre-ft/yr (720 hm^3/yr); median of yearly mean discharges, 720 ft^3/s (20.4 m^3/s), 5.9 in/yr (150 mm/yr), 522,000 acre-ft/yr (644 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,000 ft^3/s (1,050 m^3/s) Mar. 28, 1961, gage height, 16.33 ft (4.977 m); minimum daily, 28 ft^3/s (0.79 m^3/s) Oct. 21, 1922.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft (4.94 m), from floodmark at site 300 ft (91 m) upstream, discharge, 34,300 ft^3/s (971 m^3/s). Flood of Mar. 16, 1929, reached a stage of about 16 ft (5 m), from information by City of Waterloo, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft^3/s (113 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Apr. 30	1745	4,440	126	5.00	1.524
June 25	2045	5,270	149	5.69	1.734
July 19	1900	*7,050	200	*7.13	2.173
Aug. 30	0015	5,080	144	5.50	1.676

Minimum daily discharge, 180 ft^3/s (5.10 m^3/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1670	1060	683	470	270	2130	563	3410	1190	1340	1320	4490
2	1560	1050	574	440	210	1760	683	2390	1160	1550	1390	3610
3	1460	1060	462	410	220	1330	713	1900	1070	1820	2350	2800
4	1380	1050	673	350	230	1060	1280	1630	995	1570	2570	2300
5	1300	986	599	370	235	850	1680	1560	915	1300	2240	1970
6	1230	957	553	380	240	735	1570	1750	827	1120	2080	1750
7	1180	949	415	370	225	640	1410	2030	752	996	1710	1590
8	1340	925	580	360	195	588	1340	1930	702	892	1600	1460
9	1270	911	610	350	215	549	1370	1720	686	818	1520	1390
10	1090	890	660	340	200	528	1260	1530	672	746	1470	1370
11	1060	844	620	340	180	495	1270	1350	644	695	1330	1270
12	981	808	690	400	190	466	1640	1210	653	701	1190	1180
13	930	841	610	423	200	454	1510	1120	1840	1340	1080	1090
14	913	854	605	340	250	486	1450	1060	2410	2880	1080	1030
15	913	816	615	310	300	524	1380	1020	2620	3670	1060	975
16	890	799	500	340	340	537	1130	974	2450	2990	1390	903
17	983	792	500	355	441	532	1060	911	1990	3910	1680	829
18	1140	774	485	350	554	530	992	854	1540	5330	1520	789
19	1170	753	300	345	644	543	924	849	1330	6540	1330	740
20	1110	741	300	340	709	525	878	775	1180	5390	1140	710
21	1080	738	330	340	823	478	860	579	1100	4020	1010	631
22	1020	720	380	345	846	460	923	677	1120	3300	911	610
23	974	725	370	345	699	461	1030	683	985	2490	837	578
24	1080	721	330	350	982	451	1070	848	2320	2120	786	544
25	1530	694	300	382	804	443	991	1200	4600	2160	782	808
26	1820	670	340	388	871	441	935	2200	4610	2190	641	782
27	1690	677	380	380	1020	437	887	1850	2960	2080	637	773
28	1590	678	410	350	1840	435	1110	1430	2160	1790	2910	776
29	1430	723	450	320	---	450	1740	1310	1740	1790	4680	742
30	1240	686	479	315	---	482	3840	1400	1470	1590	4830	708
31	1080	---	478	310	---	504	---	1430	---	1420	4760	---
TOTAL	38104	24892	15281	11209	13933	20305	37489	43580	48691	70548	53834	39190
MEAN	1229	830	493	362	498	655	1250	1406	1623	2276	1737	1307
MAX	1820	1060	690	470	1840	2130	3840	3410	4610	6540	4830	4490
MIN	890	670	300	310	180	435	563	579	644	695	637	544
CFSM	.74	.50	.30	.22	.30	.39	.75	.85	.98	1.37	1.05	.79
IN.	.85	.56	.34	.25	.31	.45	.84	.98	1.09	1.58	1.21	.88
AC-FT	75580	49370	30310	22230	27640	40270	74360	86440	96580	139900	106800	77750

CAL YR 1980 TOTAL 545238 MEAN 1490 MAX 14200 MIN 269 CFSM .90 IN 12.21 AC-FT 1081000
WTR YR 1981 TOTAL 417063 MEAN 1143 MAX 6540 MIN 180 CFSM .69 IN 9.34 AC-FT 827200

05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat 42°37'58", long 92°32'24", in SW1/4 SE1/4 sec.6, T.90 N., R.14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft (30 m) downstream from bridge on county highway C55 at Finchford, 3.2 mi (5.1 km) upstream from Shell Rock River, and 5.0 mi (8.0 km) upstream from mouth.

DRAINAGE AREA.--846 mi² (2,191 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 867.54 ft (264.426 m) NGVD. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. An authorized diversion is made into Big Marsh, 16 mi (25.7 km) upstream from gage, of 2,100 acre-ft each year between September 1 and November 15. Net effect on daily flows at gage is unknown. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--36 years, 482 ft³/s (13.08 m³/s), 7.42 in/yr (188 mm/yr), 334,700 acre-ft/yr (413 hm³/yr); median of yearly mean discharges, 400 ft³/s (11.3 m³/s), 6.4 in/yr (163 mm/yr), 290,000 acre-ft/yr (358 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s (903 m³/s) June 27, 1951, gage height, 17.28 ft (5.267 m), from floodmarks; minimum daily, 5.9 ft³/s (0.17 m³/s) Feb. 26, 27, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft (4 m), from information by local resident, discharge, about 12,800 ft³/s (362 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 29	0300	*3,350	94.9	*11.04	3.365	Aug. 5	0930	2,610	73.9	10.33	3.149

Minimum daily discharge, 90 ft³/s (2.55 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	773	535	225	150	116	522	317	386	415	1480	1410	837
2	678	511	190	142	102	416	325	363	365	1130	1380	717
3	614	495	195	140	110	359	371	339	362	921	1840	662
4	530	454	200	130	106	325	567	323	345	782	2380	570
5	494	426	230	126	100	311	684	339	324	680	2500	495
6	481	409	330	122	100	292	904	410	292	596	1750	448
7	465	405	310	116	98	272	843	417	264	520	1390	421
8	451	403	270	114	96	259	718	400	260	454	1290	414
9	436	399	225	108	98	257	682	378	250	406	1060	407
10	407	383	200	102	98	252	628	350	247	366	927	397
11	411	367	172	100	90	245	765	319	240	331	786	374
12	402	360	172	100	92	240	820	295	233	303	678	345
13	379	358	176	104	96	239	953	283	646	286	601	318
14	349	363	168	102	100	234	1010	277	1020	250	585	289
15	342	352	168	102	108	230	944	271	1150	271	574	261
16	345	337	168	102	120	227	800	255	1400	592	551	233
17	373	326	156	104	180	227	725	238	1440	1170	518	212
18	468	320	146	106	310	223	660	223	1420	1370	471	204
19	539	312	130	110	510	221	587	211	1170	986	432	196
20	517	308	130	110	428	221	524	199	809	823	401	190
21	488	304	148	110	347	218	482	189	694	940	379	182
22	464	299	154	118	309	215	476	183	684	835	348	174
23	443	294	150	124	300	212	497	204	550	738	331	166
24	516	290	142	134	310	211	488	287	896	848	311	161
25	685	279	138	146	339	211	466	315	1510	1230	333	223
26	738	255	138	148	441	217	439	642	1990	1610	363	345
27	692	270	140	130	480	226	417	780	2600	1950	340	562
28	634	280	142	120	690	230	455	625	3180	2220	313	519
29	589	265	142	114	---	243	428	539	3280	2000	433	427
30	587	250	146	118	---	268	408	509	2380	1890	600	362
31	557	---	152	120	---	296	---	498	---	1830	659	---
TOTAL	15847	10599	5553	3674	6270	8119	18353	11047	30406	29808	26093	11111
MEAN	511	353	179	119	224	262	612	356	1014	962	842	370
MAX	773	535	330	150	690	522	1010	780	3280	2220	2500	837
MIN	342	250	130	100	90	211	317	183	233	250	311	161
CFSM	.60	.42	.21	.14	.27	.31	.72	.42	1.20	1.14	1.00	.44
IN.	.70	.47	.24	.16	.28	.36	.81	.49	1.34	1.31	1.15	.49
AC-FT	31430	21020	11010	7290	12440	16100	36400	21910	60310	59120	51760	22040

CAL YR 1980 TOTAL 203647 MEAN 556 MAX 2250 MIN 125 CFSM .66 IN 8.95 AC-FT 403900
WTR YR 1981 TOTAL 176880 MEAN 485 MAX 3280 MIN 90 CFSM .57 IN 7.78 AC-FT 350800

05459000 SHELL ROCK RIVER NEAR NORTHWOOD, IA

LOCATION.--Lat 43°24'51", long 93°13'14", in NW1/4 NW1/4 sec.9, T.99 N., R.20 W., Worth County, Hydrologic Unit 07080202, on right bank 50 ft (15 m) downstream from bridge on county highway A27, 1.3 mi (2.1 km) downstream from Drainage ditch 2, 2.0 mi (3.2 km) south of Northwood, 3.7 mi (6.0 km) upstream from Elk Creek, and 84.5 mi (136.0 km) upstream from mouth.

DRAINAGE AREA.--300 mi^2 (777 km^2).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1948 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,176.48 ft (358.591 m) NGVD. Prior to May 17, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--36 years, 145 ft^3/s (4.106 m^3/s), 6.56 in/yr (167 mm/yr), 105,100 acre-ft/yr (130 hm^3/yr); median of yearly mean discharges, 140 ft^3/s (3.96 m^3/s), 6.3 in/yr (160 mm/yr), 101,000 acre-ft/yr (125 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft^3/s (96.3 m^3/s) Apr. 8, 1965, gage height, 12.07 ft (3.679 m), backwater from ice; no flow Jan. 14-19, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Apr. 28	1200	*1,290	36.5	*8.24	2.512	July 15	1415	1,230	34.8	8.09	2.466
June 24	unknown	821	23.3	7.06	2.152	Aug. 27	1645	1,130	32.0	7.84	2.390

Minimum daily discharge, 37 ft^3/s (1.05 m^3/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	151	78	58	43	95	103	616	190	507	278	815
2	191	144	65	53	38	91	111	495	174	477	260	709
3	187	137	59	52	40	87	100	380	162	460	235	604
4	170	143	73	50	42	88	133	484	153	440	213	513
5	158	138	73	49	43	80	146	566	138	405	220	437
6	147	129	70	49	43	77	123	502	129	360	200	373
7	139	126	67	48	43	74	104	438	123	313	183	360
8	140	122	64	47	42	71	106	391	112	269	182	363
9	134	115	66	46	42	70	107	354	117	233	181	315
10	126	119	66	44	39	68	99	335	116	198	170	272
11	138	109	69	43	37	67	97	311	108	235	151	240
12	130	98	69	45	38	67	98	283	101	293	135	218
13	106	99	68	45	40	66	93	280	185	244	124	191
14	98	110	68	45	43	64	99	265	244	233	217	174
15	99	104	66	45	52	63	97	248	303	1090	307	161
16	111	99	64	43	86	63	82	230	291	1180	216	150
17	137	95	64	43	120	59	83	211	254	1120	172	141
18	148	94	60	45	124	57	87	199	212	1050	151	128
19	145	93	53	45	122	61	95	183	201	971	136	118
20	136	92	48	45	112	60	105	172	185	886	124	110
21	131	90	48	45	76	52	101	162	174	795	114	103
22	128	94	49	47	80	48	101	153	162	699	105	98
23	125	84	48	49	108	48	125	181	222	678	98	90
24	186	84	47	51	106	47	137	278	782	599	111	85
25	215	71	48	52	98	52	114	258	727	534	115	90
26	204	74	47	52	92	53	94	232	594	490	778	95
27	181	78	50	48	96	58	111	218	466	451	1080	110
28	172	76	56	48	108	52	1020	230	372	425	1080	111
29	166	78	59	44	---	84	954	338	416	388	1070	94
30	158	79	59	42	---	100	769	272	548	342	999	85
31	154	---	58	43	---	106	---	223	---	301	913	---
TOTAL	4657	3123	1874	1457	1953	2108	5594	9487	7961	16666	10318	7353
MEAN	150	104	60.5	47.0	69.8	68.0	186	306	265	538	333	245
MAX	215	151	78	58	124	106	1020	616	782	1180	1080	815
MIN	98	71	46	42	37	47	82	153	101	198	98	85
CFSM	.50	.35	.20	.16	.23	.23	.62	1.02	.88	1.79	1.11	.82
IN.	.58	.39	.23	.18	.24	.26	.69	1.18	.99	2.07	1.28	.91
AC-FT	9240	6190	3720	2890	3870	4180	11100	18820	15790	33060	20470	14580

CAL YR 1980 TOTAL 72333 MEAN 198 MAX 991 MIN 40 CFSM .66 IN 8.97 AC-FT 143500
WTR YR 1981 TOTAL 72551 MEAN 199 MAX 1180 MIN 37 CFSM .66 IN 9.00 AC-FT 143900

05459500 WINNEBAGO RIVER AT MASON CITY, IA

LOCATION.--Lat 43°09'54", long 93°11'33", in NE1/4 NW1/4 sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft (198 m) upstream from Thirteenth Street Bridge in Mason City, 0.1 mi (0.2 km) downstream from Calmus Creek, and 1.0 mi (1.6 km) upstream from Willow Creek, and at mile 275.8 above mouth of Iowa River.

DRAINAGE AREA.--526 mi^2 (1,362 km^2).

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

REVISED RECORDS.--WSP 825: 1935-36. WSP 1438: Drainage area. WSP 1558: 1933-37, 1943 (M), 1945, 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,069.59 ft (326.011 m) NGVD. Prior to Oct. 15, 1934, nonrecording gage at datum 6.47 ft (1.97 m) lower. Oct. 15 to Nov. 6, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--49 years, 245 ft^3/s (6.938 m^3/s), 6.32 in/yr (161 mm/yr), 177,500 acre-ft/yr (219 hm^3/yr); median of yearly mean discharges, 210 ft^3/s (5.95 m^3/s), 5.4 in/yr (137 mm/yr), 152,000 acre-ft/yr (187 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft^3/s (306 m^3/s) Mar. 30, 1933, gage height, 15.7 ft (4.79 m), present datum; minimum daily, 2.5 ft^3/s (0.071 m^3/s) Dec. 29-31, 1933, Aug. 5, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft^3/s (56.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
May 24	0315	2,180	61.7	7.07	2.155	June 24	0930	*5,510	156	*10.90	3.322
May 29	0045	3,220	91.2	8.33	2.539						

Minimum daily discharge, 58 ft^3/s (1.64 m^3/s) Feb. 2,11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	274	148	97	60	146	212	491	556	1230	651	1520
2	292	263	66	92	58	125	205	463	492	1080	890	1320
3	280	260	111	87	59	110	212	465	426	950	742	1120
4	275	247	143	82	61	113	274	576	367	859	639	961
5	271	235	147	76	64	108	287	678	329	777	697	835
6	265	233	155	79	68	109	261	619	295	701	808	732
7	249	234	153	76	68	103	243	568	264	630	636	690
8	239	226	143	72	65	102	228	537	246	572	591	643
9	229	220	136	70	62	101	207	515	238	504	562	569
10	223	206	129	67	59	100	186	484	228	429	521	502
11	208	197	120	67	58	97	179	448	210	415	467	451
12	201	193	132	71	60	96	168	409	219	365	418	402
13	196	197	110	70	63	94	160	398	776	331	371	359
14	198	194	118	68	67	91	148	378	799	340	509	326
15	192	189	120	67	71	92	134	342	938	1410	909	295
16	220	185	120	68	106	87	134	307	879	1190	769	272
17	297	183	119	74	199	86	144	276	797	1110	674	254
18	317	179	118	70	233	85	130	251	715	1170	598	239
19	301	176	70	68	216	83	136	234	648	1170	530	232
20	289	174	66	63	198	84	137	214	590	1310	478	221
21	274	172	67	62	206	84	131	200	507	1200	419	211
22	260	169	72	62	193	86	151	189	455	1040	355	197
23	260	167	70	65	188	85	202	445	649	1080	306	187
24	359	161	68	67	163	83	192	1730	4500	1160	299	180
25	397	144	66	73	153	88	178	893	2730	1210	367	197
26	377	141	71	80	140	93	172	636	2730	1130	778	232
27	361	160	79	78	170	91	162	507	2300	977	1520	221
28	338	149	85	70	185	94	479	906	1850	889	1530	207
29	314	158	89	61	---	119	574	2000	1620	797	1940	204
30	300	155	93	61	---	178	545	976	1430	711	1800	200
31	287	---	96	60	---	204	---	715	---	638	1690	---
TOTAL	8579	5841	3280	2223	3293	3217	6571	17850	28783	27375	23464	13979
MEAN	277	195	106	71.7	118	104	219	576	959	883	757	466
MAX	397	274	155	97	233	204	574	2000	4500	1410	1940	1520
MIN	192	141	66	60	58	83	130	189	210	331	299	180
CFSM	.53	.37	.20	.14	.22	.20	.42	1.10	1.82	1.68	1.44	.89
IN.	.61	.41	.23	.16	.23	.23	.46	1.26	2.04	1.94	1.66	.99
AC-FT	17020	11590	6510	4410	6530	6380	13030	35410	57090	54300	46540	27730

CAL YR 1980 TOTAL 136222 MEAN 372 MAX 4910 MIN 38 CFSM .71 IN 9.63 AC-FT 270200
WTR YR 1981 TOTAL 144485 MEAN 396 MAX 4500 MIN 58 CFSM .75 IN 10.22 AC-FT 286500

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	153	127	78	57	93	454	604	340	434	295	173	160	248
RUNOFF (INCHES)	0.34	0.27	0.17	0.12	0.18	1.00	1.28	0.74	0.92	0.65	0.38	0.34	6.40
STD. DEVIATION	0.46	0.33	0.16	0.11	0.17	0.70	1.41	0.51	0.75	0.70	0.36	0.46	3.23
PERCENT OF ANNUAL	5.3	4.2	2.7	1.9	2.8	16	20	12	14	10	5.9	5.3	----
PRECIP. (INCHES)	1.7	1.2	1.3	1.0	1.0	2.0	2.6	4.2	5.0	3.9	3.0	3.0	30.0

05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat 43°08'01", long 93°22'57", in SE1/4 NE1/4 sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi² (58.5 km²).

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft (372.539 m) NGVD, and 4.60 ft (1.402 m) below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft (15 m) long at elevation 1,226.84 ft (373.941 m) NGVD. Dam constructed in 1903. A previous outlet works had been constructed in 1887. Lake is used for conservation and recreation. Area of lake is approximately 3,600 acres (1,460 hm²).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft (1.811 m) July 3, 1951; minimum observed, 1.16 ft (0.354 m) Dec. 20, 22-24, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.11 ft (1.558 m) Aug. 31; minimum, 4.45 ft (1.356 m) June 12.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.81	4.65	4.54	---	4.57	---	4.66	4.60	4.60	4.86	4.93	5.05
2	4.81	4.65	4.57	---	4.57	---	4.61	4.63	4.58	4.85	4.95	5.04
3	4.76	4.67	4.57	---	4.57	---	4.61	4.61	4.58	4.85	4.94	5.01
4	4.75	4.65	4.57	---	---	---	4.68	4.65	4.54	4.86	4.93	4.99
5	4.74	4.64	4.57	---	---	---	4.64	4.64	4.54	4.85	4.95	4.96
6	4.74	4.65	4.58	---	---	---	4.65	4.62	4.52	4.83	4.96	4.94
7	4.76	4.64	4.58	---	---	---	4.62	4.62	4.53	4.83	4.95	4.99
8	4.71	4.65	4.58	---	---	---	4.62	4.61	4.48	4.84	4.95	4.96
9	4.69	4.65	4.58	---	---	---	4.65	4.60	4.50	4.76	4.94	4.98
10	4.74	4.62	4.59	---	---	4.69	4.64	4.55	4.51	4.75	4.91	4.95
11	4.66	4.60	4.59	---	---	---	4.62	4.55	4.46	4.80	4.91	4.93
12	4.63	4.61	4.59	4.57	---	---	4.62	4.54	4.45	4.81	4.89	4.90
13	4.59	4.61	4.58	---	---	4.65	4.63	4.56	4.60	4.73	4.88	4.89
14	4.59	4.62	4.58	---	---	4.65	4.63	4.56	4.63	4.72	4.91	4.84
15	4.58	4.62	4.58	---	---	---	4.63	4.56	4.65	4.87	4.91	4.83
16	4.64	4.62	4.58	---	---	---	4.65	4.55	4.65	4.85	4.87	4.79
17	4.74	4.61	4.58	---	4.55	---	4.65	4.52	4.65	4.85	4.85	4.76
18	4.71	4.62	4.58	---	---	---	4.60	4.48	4.59	4.82	4.84	4.76
19	4.67	4.61	4.58	---	---	4.59	4.62	4.49	4.55	4.80	4.82	4.74
20	4.65	4.63	4.58	---	---	4.57	4.60	4.49	4.55	4.84	4.81	4.71
21	4.63	4.61	4.58	---	---	4.55	4.63	4.53	4.52	4.80	4.79	4.69
22	4.62	4.64	4.58	---	---	4.55	4.67	4.52	4.56	4.78	4.77	4.67
23	4.65	4.59	4.58	4.54	---	4.56	4.72	4.56	4.60	4.92	4.76	4.65
24	4.73	4.58	4.58	---	4.64	4.55	4.65	4.64	4.82	4.94	4.83	4.65
25	4.72	4.58	---	---	---	4.56	4.62	4.63	4.85	4.93	4.80	4.68
26	4.69	4.58	---	---	---	4.55	4.62	4.57	4.84	4.90	4.80	4.73
27	4.68	4.57	---	4.57	4.70	4.53	4.63	4.57	4.85	4.89	4.80	4.72
28	4.67	4.58	---	4.57	---	4.56	4.63	4.60	4.89	4.92	4.92	4.65
29	4.67	4.59	---	4.56	---	4.58	4.64	4.61	4.90	4.93	5.10	4.64
30	4.68	4.57	---	4.55	---	4.61	4.63	4.60	4.86	4.93	5.07	4.64
31	4.66	---	---	4,55	---	4.66	---	4.58	---	4.92	5.06	---
MEAN	4.69	4.62	---	---	---	---	4.64	4.58	4.63	4.85	4.90	4.82
MAX	4.81	4.67	---	---	---	---	4.72	4.65	4.90	4.94	5.10	5.05
MIN	4.58	4.57	---	---	---	---	4.60	4.48	4.45	4.72	4.76	4.64

05462000 SHELL ROCK RIVER AT SHELL ROCK, IA

LOCATION.--Lat 42°39'10", long 92°35'45", in NE1/4 NW1/4 sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202, on right bank 400 ft (122 m) upstream from bridge on county highway C45 in Shell Rock, 2.2 mi (3.5 km) downstream from Curry Creek, and 10.4 mi (16.7 km) upstream from mouth.

DRAINAGE AREA.--1,746 mi² (4,522 km²).

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft (269.852 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation at low stages caused by power plant at Greene. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--28 years, 900 ft³/s (25.49 m³/s), 7.00 in/yr (178 mm/yr), 652,000 acre-ft/yr (804 hm³/yr); median of yearly mean discharges, 780 ft³/s (22.1 m³/s), 6.1 in/yr (155 mm/yr), 565,000 acre-ft/yr (697 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s (949 m³/s) Mar. 28, 1961, gage height, 16.25 ft (4.953 m); minimum daily, 38 ft³/s (1.08 m³/s) Feb. 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1858 reached a stage of 17.7 ft (5.39 m) at bridge 400 ft (122 m) downstream, from information furnished by Corps of Engineers, discharge, about 45,000 ft³/s (1,270 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 30	0100	4,560	129	10.23	3.118	July 16	1830	5,000	142	10.34	3.152
June 14	0415	4,510	128	10.14	3.091	July 21	0400	4,600	130	10.13	3.088
June 25	2145	*9,810	278	*12.22	3.725	Aug. 30	0800	4,690	133	10.30	3.139

Minimum daily discharge, 158 ft³/s (4.47 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1490	1150	643	468	250	894	649	2620	1830	3290	1790	3780
2	1410	1100	505	447	184	711	635	2240	1810	2810	2830	3420
3	1330	1080	354	418	220	582	671	1960	1660	2670	3390	3020
4	1280	1050	511	349	236	538	942	1770	1390	2450	2420	2640
5	1230	1010	689	357	245	513	1290	1980	1220	2290	2060	2270
6	1180	986	731	377	250	484	1210	2170	1090	2090	2300	1960
7	1140	977	736	320	255	456	1070	1990	974	1910	2250	1830
8	1100	949	734	312	230	438	1000	1790	903	1740	1880	1720
9	1060	934	649	300	212	436	1020	1660	848	1600	1700	1660
10	1030	894	617	290	195	422	939	1640	834	1420	1620	1510
11	986	854	492	282	158	426	952	1430	790	1300	1500	1360
12	944	832	620	309	200	414	1010	1250	879	1430	1350	1240
13	936	832	647	330	216	414	944	1280	2040	1390	1220	1130
14	909	825	590	328	220	414	933	1240	3850	1240	1160	1040
15	885	814	597	308	247	408	865	1180	3120	1700	1410	966
16	895	798	606	281	311	401	769	1110	3040	4700	2050	888
17	1030	777	598	299	455	401	752	1030	2530	3980	1750	837
18	1180	757	601	315	613	401	736	948	2220	3370	1540	801
19	1210	747	314	310	690	395	712	896	1830	3270	1380	770
20	1170	737	290	310	635	389	696	855	1660	3670	1240	734
21	1110	722	300	314	665	383	696	794	1540	4370	1130	698
22	1060	709	320	318	635	395	711	752	1410	3360	1040	662
23	1030	707	310	316	631	389	756	820	1350	2930	945	627
24	1230	693	300	332	578	389	821	1540	3640	3190	878	605
25	1570	682	298	349	666	389	838	3320	8700	3140	911	692
26	1610	825	320	366	758	395	792	2270	8400	2960	930	693
27	1510	604	350	372	705	404	727	2260	5810	2680	2440	755
28	1410	841	380	318	1030	407	886	1490	4740	2550	3980	717
29	1310	838	415	300	---	425	3460	2870	3950	2400	3960	693
30	1250	641	441	290	---	466	3090	3140	3550	2200	4800	678
31	1200	---	459	280	---	550	---	2300	---	1950	4110	---
TOTAL	36685	24748	15418	10261	11597	14129	30512	52495	77408	80130	61754	40396
MEAN	1183	825	497	331	414	456	1017	1693	2580	2585	1992	1347
MAX	1610	1150	736	468	1030	894	3460	3320	8700	4700	4800	3780
MIN	885	604	290	280	158	383	635	752	790	1240	878	605
CFSM	.68	.47	.29	.19	.24	.26	.58	.97	1.48	1.48	1.14	.77
IN.	.78	.53	.33	.22	.25	.30	.65	1.12	1.65	1.71	1.32	.86
AC-FT	72760	49080	30580	20350	23000	28020	60520	104100	153500	158900	122500	80130

CAL YR 1980 TOTAL 503528 MEAN 1376 MAX 12200 MIN 289 CFSM .79 IN 10.73 AC-FT 998700
WTR YR 1981 TOTAL 455528 MEAN 1248 MAX 8700 MIN 158 CFSM .72 IN 9.71 AC-FT 903500

05463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°30'50", long 92°37'55"; in SE1/4 SE1/4 sec.28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on downstream side of center bridge pier of bridge on county highway T55, 0.2 mi (0.3 km) north of New Hartford, and 8 mi (12.9 km) upstream from mouth.

DRAINAGE AREA.--347 mi^2 (899 km^2).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 882.44 ft (268.968 m) NGVD. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--36 years, 186 ft^3/s (5.268 m^3/s), 7.28 in/yr (185 mm/yr), 134,800 acre-ft/yr (166 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft^3/s (510 m^3/s) June 13, 1947, gage height, 13.5 ft (4.11 m), from graph based on gage readings, from rating curve extended above 14,000 ft^3/s (396 m^3/s); minimum daily, 2.3 ft^3/s (0.065 m^3/s) Jan. 20-24, 1956, Jan. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,680 ft^3/s (47.6 m^3/s) June 25, gage height, 8.39 ft (2.557 m) at 2215 hours, no other peak above base of 1,400 ft^3/s (39.6 m^3/s); minimum daily, 15 ft^3/s (0.42 m^3/s), Feb. 10-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	65	32	28	22	233	64	115	56	194	130	87
2	47	63	25	25	16	162	59	109	54	169	170	79
3	46	62	26	22	16	127	92	105	59	152	250	72
4	45	60	28	21	17	113	428	104	55	140	210	68
5	45	58	32	22	17	103	350	101	52	128	175	63
6	44	56	40	23	18	91	245	95	49	116	180	60
7	42	56	38	22	19	82	202	91	47	106	170	57
8	41	57	33	21	18	79	178	89	48	98	170	56
9	40	56	30	19	16	77	163	87	48	90	150	54
10	39	53	27	18	15	74	147	83	52	83	130	52
11	38	52	27	17	15	72	200	79	50	77	115	49
12	38	51	29	17	15	71	445	76	45	73	100	46
13	38	53	27	17	16	69	509	75	74	67	90	44
14	39	65	26	18	18	57	351	74	80	63	99	43
15	39	64	27	18	22	67	300	71	96	85	94	41
16	43	60	32	18	43	66	266	68	198	137	84	39
17	52	58	32	19	65	64	253	64	172	115	77	38
18	53	55	29	20	160	64	222	62	120	92	72	41
19	50	55	26	21	110	63	201	61	96	82	68	40
20	47	57	25	22	95	62	184	59	88	73	64	38
21	45	56	25	22	101	61	169	57	90	74	61	36
22	44	56	27	23	113	61	171	56	114	71	58	35
23	43	55	28	24	206	59	189	67	110	74	55	34
24	65	53	28	25	144	59	174	100	765	172	54	33
25	103	47	26	25	133	59	160	93	1510	146	52	75
26	96	47	26	26	159	59	151	81	1150	135	53	110
27	85	47	26	23	248	59	143	74	480	238	57	90
28	79	46	28	22	418	59	145	70	338	203	71	74
29	74	45	27	21	---	62	136	70	270	228	102	63
30	70	39	28	21	---	69	126	66	227	180	111	57
31	68	---	29	22	---	69	---	60	---	130	98	---
TOTAL	1646	1647	889	662	2255	2472	6423	2462	6594	3789	3371	1674
MEAN	53.1	54.9	28.7	21.4	80.5	79.7	214	79.4	220	122	109	55.8
MAX	103	65	40	28	418	233	509	115	1510	238	250	110
MIN	38	39	25	17	15	59	59	56	45	63	52	33
CFSM	.15	.16	.08	.06	.23	.23	.62	.23	.63	.35	.31	.16
IN.	.18	.18	.10	.07	.24	.27	.69	.26	.71	.41	.36	.18
AC-FT	3260	3270	1760	1310	4470	4900	12740	4880	13080	7520	6690	3320

CAL YR 1980 TOTAL 58493 MEAN 160 MAX 3160 MIN 25 CFSM .46 IN 6.27 AC-FT 116000
WTR YR 1981 TOTAL 33884 MEAN 92.8 MAX 1510 MIN 15 CFSM .27 IN 3.63 AC-FT 67210

05463500 BLACK HAWK CREEK AT HUDSON, IA

LOCATION.--Lat 42°24'28", long 92°27'47", in SW1/4 NE1/4 sec.27, T.88 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, on left bank 35 ft (11 m) downstream from bridge on State Highway 58, 0.2 mi (0.3 km) northwest of Chicago and Great Western Railway tracks at the west edge of Hudson, 4.5 mi (7.2 km) upstream from Prescotts Creek, and 9.6 mi (15.4 km) upstream from mouth.

DRAINAGE AREA.--303 mi² (785 km²).

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 865.03 ft (263.661 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--29 years, 159 ft³/s (4.503 m³/s), 7.13 in/yr (181 mm/yr), 115,200 acre-ft/yr (142 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 6.3 in/yr (160 mm/yr), 101,000 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) July 9, 1969, gage height, 18.23 ft (5.557 m); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,680 ft³/s (47.6 m³/s) Feb. 28, gage height, 12.90 ft (3.932 m) at 2030 hours, no other peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 8.5 ft³/s (0.24 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	34	20	16	12	646	37	49	25	98	49	23
2	23	33	14	15	9.2	238	33	45	26	83	51	21
3	22	34	12	13	9.3	162	34	43	29	73	97	20
4	23	33	16	12	9.5	138	48	44	25	67	136	19
5	23	31	20	13	9.8	115	93	43	23	60	131	18
6	23	31	29	13	11	99	79	38	21	55	116	18
7	23	32	37	13	11	84	67	36	21	51	104	19
8	22	31	35	12	10	80	64	35	25	47	90	20
9	21	29	30	11	9.4	74	58	36	35	44	79	18
10	20	28	29	11	8.8	70	52	34	37	41	70	17
11	22	26	23	10	8.5	66	50	32	35	39	62	16
12	21	26	27	10	8.7	64	57	31	26	38	54	15
13	22	30	23	10	8.9	62	66	31	24	33	49	15
14	23	34	22	10	10	58	69	31	23	30	41	14
15	24	32	23	10	12	57	62	30	105	48	51	13
16	27	29	23	10	16	54	61	28	299	119	48	13
17	35	27	23	10	62	53	64	26	139	86	41	13
18	30	25	21	11	94	50	55	26	93	59	39	14
19	25	26	14	11	71	47	52	26	71	50	35	13
20	25	27	14	12	46	45	53	25	55	47	32	13
21	24	25	14	12	37	45	48	24	53	44	29	13
22	24	26	15	13	41	43	53	23	50	42	27	12
23	24	27	16	14	41	41	105	25	46	40	24	12
24	40	22	15	14	47	40	105	42	648	51	23	12
25	50	19	14	15	50	39	87	51	1010	61	24	27
26	47	22	14	15	56	40	76	42	389	63	24	40
27	40	27	15	14	200	38	67	37	238	63	27	40
28	37	24	16	13	1370	37	61	34	175	58	34	27
29	35	27	15	12	---	39	57	33	142	61	40	23
30	35	24	16	12	---	42	54	31	118	61	36	21
31	34	---	16	13	---	40	---	27	---	54	28	---
TOTAL	868	841	621	380	2279.1	2706	1867	1058	4011	1766	1691	559
MEAN	28.0	28.0	20.0	12.3	81.4	87.3	62.2	34.1	134	57.0	54.5	18.6
MAX	50	34	37	16	1370	646	105	51	1010	119	136	40
MIN	20	19	12	10	8.5	37	33	23	21	30	23	12
CFSM	.09	.09	.07	.04	.27	.29	.21	.11	.44	.19	.18	.06
IN.	.11	.10	.08	.05	.28	.33	.23	.13	.49	.22	.21	.07
AC-FT	1720	1670	1230	754	4520	5370	3700	2100	7960	3500	3350	1110

CAL YR 1980 TOTAL 53145.0 MEAN 145 MAX 2370 MIN 12 CFSM .48 IN 6.52 AC-FT 105400
WTR YR 1981 TOTAL 18647.1 MEAN 51.1 MAX 1370 MIN 8.5 CFSM .17 IN 2.29 AC-FT 36990

05464000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat 42°29'44", long 92°20'03", in NW1/4 NW1/4 sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi (0.5 km) upstream from Eleventh Avenue bridge in Waterloo, 1.1 mi (1.8 km) downstream from Black Hawk Creek, and at mile 187.9 (302.3 km) above mouth of Iowa River.

DRAINAGE AREA.--5,146 mi² (13,328 km²).

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage recorder. Datum of gage is 824.14 ft (251.198 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Slight diurnal fluctuation during low flow caused by powerplant above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years, 2,835 ft³/s (89.29 m³/s), 7.48 in/yr (190 mm/yr), 2,054,000 acre-ft/yr (2,530 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,700 ft³/s (2,170 m³/s) Mar. 29, 1961, gage height, 21.86 ft (6.663 m); minimum daily, 152 ft³/s (4.30 m³/s) Jan. 28, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft (6.1 m), determined by Corps of Engineers, from information by City of Waterloo, discharge, 65,000 ft³/s (1,840 m³/s). Flood of Apr. 2, 1933, reached a stage of about 19.5 ft (5.9 m), from information by City of Waterloo, discharge, 61,000 ft³/s (1,730 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,300 ft³/s (462 m³/s) June 27, gage height, 10.09 ft (3.075 m) at 0215 hours no other peak above base aof 13,000 ft³/s (365 m³/s; minimum daily, 700 ft³/s (19.8 m³/s); Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4590	3200	1930	1280	800	5900	1740	5120	4920	7740	5760	10600
2	4260	2880	1800	1260	720	4540	1940	6640	4240	6730	5570	9580
3	3950	2780	1040	1200	760	3440	2080	5720	4010	6530	7830	8410
4	3690	2710	1210	1040	780	2930	3050	5090	3890	6150	8820	7190
5	3480	2890	1820	1040	810	2490	4300	4770	3360	5550	7950	6410
6	3310	2510	2110	1040	820	2060	4760	5010	3130	5050	7440	5730
7	3160	2460	1870	990	810	1950	4500	5430	2840	4600	6730	5280
8	3110	2450	1910	960	780	1840	4300	5300	2580	4160	6100	4960
9	3130	2390	1870	930	750	1750	3950	4940	2460	3660	5500	4650
10	2730	2320	1800	880	720	1690	3850	4580	2360	3390	5120	4560
11	2690	2240	1320	860	700	1620	3750	4170	2290	3130	4780	4270
12	2610	2150	1420	920	730	1570	4540	3840	2170	2930	4230	3910
13	2480	2210	1730	951	770	1520	4850	3600	3290	3270	3720	3610
14	2410	1950	1600	952	810	1500	4590	3410	6670	4460	3790	3360
15	2380	2150	1700	941	860	1640	4470	3130	7960	6080	3590	2980
16	2350	2120	1870	881	941	1530	4040	3080	7860	7120	4280	2890
17	2490	2080	1840	900	1120	1540	3590	2910	7520	9140	5080	2700
18	2800	2060	1710	927	1640	1510	3470	2730	6550	9960	4600	2560
19	3090	2010	1140	934	2230	1500	3280	2600	5620	10700	4130	2420
20	3060	2020	758	933	2450	1480	3060	2460	5030	11100	3680	2320
21	2940	1990	880	930	2370	1420	2960	2200	4540	9970	3160	2190
22	2790	1960	980	940	2550	1410	3120	2110	4360	9560	3000	2060
23	2680	1960	1000	948	2280	1360	3380	2180	4130	7910	2740	1970
24	2910	1940	960	957	2400	1350	3380	2460	5770	6840	2550	1900
25	3480	1880	900	1010	2400	1330	3310	4690	10500	7390	2490	2530
26	4800	1810	980	1080	2610	1340	3160	6100	14700	7460	2740	2740
27	4240	1840	1060	1080	3370	1330	2840	5740	15200	7620	2690	2760
28	3950	1900	1170	972	5720	1360	3070	4880	12000	7440	6170	2820
29	3670	1920	1200	879	---	1410	4510	4140	10400	7290	8790	2670
30	3380	1960	1220	900	---	1450	7430	5930	9140	6850	10100	2520
31	2820	---	1260	920	---	1580	---	6230	---	6240	10700	---
TOTAL	99130	66440	44058	30435	43701	59240	111270	134190	179510	206020	163830	122550
MEAN	3198	2215	1421	982	1561	1911	3709	4329	5984	6646	5285	4085
MAX	4590	3200	2110	1280	5720	5900	7430	8120	15200	11100	10700	10600
MIN	2350	1810	758	860	700	1330	1740	2110	2170	2930	2490	1900
CFSM	.62	.43	.28	.19	.30	.37	.72	.84	1.16	1.29	1.03	.79
IN.	.72	.48	.32	.22	.32	.43	.80	.97	1.30	1.49	1.18	.89
AC-FT	196600	131800	87390	60370	86680	117500	220700	266200	356100	408600	325000	243100

CAL YR 1980 TOTAL 1496668 MEAN 4089 MAX 24900 MIN 758 CFSM .80 IN 10.82 AC-FT 2969000
WTR YR 1981 TOTAL 1260374 MEAN 3453 MAX 15200 MIN 700 CFSM .67 IN 9.11 AC-FT 2500000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1,600	1,350	981	948	1,370	5,100	5,400	3,270	4,220	3,220	1,890	1,710	2,590
RUNOFF (INCHES)	0.36	0.29	0.22	0.21	0.28	1.14	1.17	0.73	0.92	0.72	0.42	0.37	6.84
STD. DEVIATION	0.36	0.23	0.14	0.17	0.21	0.73	1.16	0.45	0.68	0.78	0.35	0.35	3.28
PERCENT OF ANNUAL	5.3	4.2	3.2	3.1	4.1	17	17	11	14	10	6.1	5.4	----
PRECIP. (INCHES)	2.0	1.2	1.2	0.9	0.9	2.2	2.6	3.9	5.1	4.3	3.4	3.0	30.9

05464020 CEDAR RIVER NEAR GILBERTVILLE, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°24'54", long 92°13'00", in SW1/4 SW1/4 sec.23, T.88 N., R.12 W., Black Hawk County, Hydrologic Unit 07080205, at bridge on county highway D38 at Gilbertville, 1.4 mi (2.2 km) upstream from Indian Creek, and at mile 176.5 (284.0 km) above mouth of Iowa River.

DRAINAGE AREA.--5,234 mi² (13,556 km²).

PERIOD OF RECORD.--Water years 1971, 1975-81 (discontinued).

REMARKS.--Water discharge estimated on basis of records at station (No. 05464000) 11.4 mi (18.3 km) upstream. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	SOLID RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)
FEB 17...	1200	1110	570	7.5	.5	13.1	93	21	1800	333	.45	998
MAR 18...	1215	1620	555	8.7	7.5	12.5	106	53	780	335	.46	1380
APR 16...	1130	4070	550	7.4	11.0	10.0	92	83	200	331	.45	3640
MAY 19...	0945	2600	595	7.8	12.5	--	--	20	95	368	.50	2580
JUN 22...	1300	4400	590	7.8	21.0	7.8	89	41	2100	378	.51	4490
JUL 15...	1145	5960	425	8.2	27.2	6.0	78	68	4400	257	.35	4140
AUG 20...	1200	3650	565	8.5	22.5	9.2	107	61	900	344	.47	3390
SEP 08...	1300	4960	620	8.4	19.5	9.3	103	44	840	412	.56	5520

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
FEB 17...	12	3.9	.560	1.3	1.90	5.8	26	.400	0	0	20	.00
MAR 18...	18	3.7	.140	1.8	1.90	5.6	25	.280	1	0	10	.00
APR 16...	91	5.2	.110	1.9	2.00	7.2	32	.300	6	0	20	.00
MAY 19...	47	2.3	.070	1.7	1.80	4.1	18	.280	4	0	20	.00
JUN 22...	79	7.8	.070	1.8	1.90	9.7	43	.340	5	0	20	.00
JUL 15...	198	4.2	.190	1.7	1.90	6.1	27	.460	8	0	60	.00
AUG 20...	68	6.0	.030	2.3	2.30	8.3	37	.290	2	0	30	.00
SEP 08...	92	6.4	.030	.00	<.20	6.4	28	.260	2	0	20	>.01

05464137 FOURMILE CREEK NEAR TRAER, IA

LOCATION.--Lat 42°12'07", long 92°33'44", NW1/4 SE1/4 sec.2, T.86 N., R.15 W., Tama County, Hydrologic Unit 07080208, on left bank 10 ft (3 m) downstream from bridge on county highway T69, 2.0 mi (3.2 km) upstream from mouth, and 5.0 mi (8.0 km) northwest of Traer.

DRAINAGE AREA.--19.51 mi² (50.53 km²).

PERIOD OF RECORD.--July 1962 to September 1974, October 1975 to December, 1980 (discontinued).

REVISED RECORDS.--WDR IA-78-1: 1963-74.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 905.87 ft (276.109 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1963-74, 76-80), 11.9 ft³/s (0.337 m³/s), 8.28 in/yr (210 mm/yr), 8,620 acre-ft/yr (10.63 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s (41.1 m³/s) Mar. 18, 1979, gage height, 11.93 ft (3.636 m); maximum gage height, 13.41 ft (4.087 m) Feb. 19, 1971, backwater from ice; no flow for many days in 1977.

EXTREMES FOR CURRENT PERIOD.--October to December 1980: Maximum discharge during period, 8.6 ft³/s (0.244 m³/s) Oct. 24, gage height, 7.16 (2.182 m); minimum daily, 0.69 ft³/s (0.020 m³/s) Dec. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.9	1.2									
2	1.3	1.8	1.1									
3	1.3	1.7	1.1									
4	1.3	1.6	1.2									
5	1.3	1.6	1.7									
6	1.2	1.7	3.2									
7	1.2	1.7	3.1									
8	1.2	1.9	2.4									
9	1.2	1.4	2.2									
10	1.0	1.4	1.7									
11	1.0	1.5	1.6									
12	1.2	1.6	1.5									
13	1.2	1.9	1.4									
14	1.3	2.1	1.3									
15	1.4	1.8	1.3									
16	1.4	1.9	1.2									
17	1.5	1.4	1.2									
18	1.6	1.5	1.0									
19	1.5	1.4	.80									
20	1.4	1.8	.69									
21	1.2	1.6	.70									
22	1.1	1.7	.80									
23	1.2	1.9	.84									
24	4.7	1.3	.80									
25	2.9	1.3	.76									
26	2.4	1.4	.80									
27	2.3	1.5	.82									
28	2.2	1.5	.86									
29	2.0	1.4	.84									
30	2.0	1.3	.86									
31	3.1	---	.88									
TOTAL	51.0	48.4	39.85									
MEAN	1.65	1.61	1.29									
MAX	4.7	2.1	3.2									
MIN	1.0	1.3	.69									
CFSM	.09	.08	.07									
IN.	.10	.09	.08									
AC-FT	101	96	79									

CAL YR 1980 TOTAL 3766.50 MEAN 10.3 MAX 253 MIN .69 CFSM .53 IN 7.18 AC-FT 7470

05464500 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°58'14", long 91°40'01", in SE1/4 NW1/4 sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft (122 m) upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi (4.3 km) upstream from Prairie Creek, and at mile 112.7 (181.3 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi^2 (16,861 km^2).

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1924. WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage recorder. Datum of gage is 700.47 ft (213.503 m) NGVD. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--79 years, 3,305 ft^3/s (93.60 m^3/s), 6.89 in/yr (175 mm/yr), 2,394,000 acre-ft/yr (2,950 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft^3/s (2,070 m^3/s) Mar. 31, 1961, gage height, 19.66 ft (5.992 m); maximum gage height, 20.0 ft (6.10 m) Mar. 18, 1929; minimum discharge, 53 ft^3/s (1.50 m^3/s) Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 ft^3/s (6.00 m^3/s) Dec. 10, 1949.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1851 reached a stage of about 20 ft (6 m), discharge, 65,000 ft^3/s (1,840 m^3/s), estimated.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft^3/s (340 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 29	1530	*15,400	436	*7.25	2.210	Aug. 6	1230	13,000	368	6.68	2.036

Minimum daily discharge, 553 ft^3/s (15.7 m^3/s) Dec. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5110	3570	2150	1470	1030	6600	1660	5470	5350	11100	6170	10200
2	4810	3250	2090	1430	980	6910	1740	7070	4740	9000	6470	10600
3	4500	3460	1270	1350	870	5330	1890	6730	4180	7370	6730	10500
4	4250	3230	1310	1270	800	4310	2200	5660	3800	6710	7030	9110
5	3940	3150	1450	1150	860	3610	2530	4880	3610	5290	8990	7730
6	3790	3090	2270	1100	950	3230	3140	4510	3250	5580	11500	6360
7	3630	2880	2770	1120	980	2880	3910	4410	2980	4990	11200	5820
8	3490	2960	2480	1110	990	2380	4110	4690	2860	4540	8200	5370
9	3370	2810	2190	1090	950	2380	3970	4830	2740	4160	6870	4710
10	3320	2780	1900	1070	940	2270	3780	4610	2610	3780	5970	4450
11	3220	2730	1600	1040	920	2170	3680	4320	2500	3400	5210	4190
12	3000	2670	1700	1010	850	2080	3790	4000	2330	3260	4910	4000
13	2950	2660	1810	1010	760	2010	4200	3820	2390	3060	4540	3730
14	2870	2620	1500	1050	840	1940	4780	3600	3020	3030	4470	3340
15	2670	2620	1630	1070	940	1890	4710	3320	5120	3880	4530	3220
16	2770	2380	1870	1080	1090	1850	4330	3230	8890	5020	4120	3030
17	2820	2470	2060	1030	1280	1850	4260	3040	8850	5740	4060	2770
18	2800	2450	2230	1000	1770	1850	3890	2970	7950	7240	4820	2580
19	2860	2400	1770	1040	1940	1760	3450	2850	6960	8500	4680	2540
20	3210	2370	790	1100	2450	1770	3460	2710	5850	9300	4280	2430
21	3250	2310	553	1110	3550	1760	3280	2490	5160	10100	3820	2330
22	3190	2300	600	1120	3680	1740	3190	2470	4620	10400	3560	2220
23	3100	2310	810	1100	3790	1690	3170	2300	4440	9860	3260	2110
24	3090	2250	1020	1130	3410	1660	3290	2310	5460	8820	3120	2070
25	3160	2150	1230	1180	3410	1620	3390	2350	6860	7560	2890	2270
26	3310	2100	1320	1250	4170	1610	3330	2890	8610	7140	2760	3650
27	4030	2130	1370	1290	4140	1570	3220	4690	10800	7380	2900	4540
28	4430	2110	1410	1320	4820	1570	3140	5030	13000	7440	2960	3760
29	4230	2080	1500	1310	---	1580	3000	4640	14900	7460	4040	3400
30	4040	2130	1520	1120	---	1610	3290	4050	13600	6980	6780	3180
31	3710	---	1490	1020	---	1640	---	4090	---	6760	8770	---
TOTAL	108920	78420	49663	35540	53160	77120	101780	124030	177430	205850	169610	136210
MEAN	3514	2614	1602	1146	1899	2488	3393	4001	5914	6640	5471	4540
MAX	5110	3570	2770	1470	4820	6910	4780	7070	14900	11100	11500	10600
MIN	2670	2080	553	1000	760	1570	1660	2300	2330	3030	2760	2070
CFSM	.54	.40	.25	.18	.29	.38	.52	.62	.91	1.02	.84	.70
IN.	.62	.45	.28	.20	.30	.44	.58	.71	1.01	1.18	.97	.78
AC-FT	216000	155500	98510	70490	105400	153000	201900	246000	351900	408300	336400	270200

CAL YR 1980 TOTAL 1631151 MEAN 4457 MAX 21000 MIN 553 CFSM .69 IN 9.32 AC-FT 3235000
WTR YR 1981 TOTAL 1317733 MEAN 3610 MAX 14900 MIN 553 CFSM .56 IN 7.53 AC-FT 2614000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	2,080	1,920	1,300	1,430	1,860	6,150	6,960	4,320	5,420	4,240	2,460	2,180	3,360
RUNOFF (INCHES)	0.37	0.33	0.23	0.25	0.30	1.09	1.19	0.77	0.93	0.75	0.44	0.37	7.01
STD. DEVIATION	0.35	0.27	0.15	0.23	0.20	0.67	1.04	0.45	0.74	0.86	0.36	0.30	3.25
PERCENT OF ANNUAL	5.3	4.7	3.3	3.6	4.3	16	17	11	13	11	6.3	5.3	----
PRECIP. (INCHES)	2.3	1.6	1.3	1.2	0.9	2.2	3.2	3.7	4.8	3.5	3.0	3.5	31.3

05464640 PRAIRIE CREEK AT FAIRFAX, IA

LOCATION.--Lat 41°55'22", long 91°47'02", in SE1/4 SW1/4 sec.9, T.82 N., R.8 W., Linn County, Hydrologic Unit 07080208, on right bank 12 ft (4 m) upstream from bridge on State Highway 149 at west side of Fairfax, and 10.7 mi (17.2 km) upstream from mouth.

DRAINAGE AREA.--178 mi² (461 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 737.00 ft (224.638 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 129 ft³/s (3.653 m³/s), 9.84 in/yr (250 mm/yr), 93,460 acre-ft/yr (115 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s), 8.4 in/yr (213 mm/yr), 79,700 acre-ft/yr (98.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,140 ft³/s (231 m³/s) Mar. 19, 1979, gage height, 14.63 ft (4.459 m); no flow July 10-18, 30, Aug. 1, 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred in June 1944, stage and discharge unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft³/s (31.4 m³/s) Sept. 26, gage height, 6.32 ft (1.926 m), no peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 6.2 ft³/s (0.18 m³/s) Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	28	18	9.8	8.8	180	24	50	22	63	88	34
2	20	26	14	10	8.6	127	23	46	22	59	497	29
3	20	28	11	11	8.7	96	23	46	23	57	369	24
4	20	25	13	9.8	9.0	92	43	47	21	57	201	22
5	20	23	17	9.0	9.2	80	48	50	21	53	173	20
6	20	24	29	8.8	9.4	71	38	39	20	48	163	20
7	20	25	43	8.4	8.5	62	35	37	19	43	118	25
8	20	23	95	8.2	7.4	60	41	37	21	40	89	52
9	20	23	88	8.1	6.8	58	52	39	21	36	72	33
10	20	21	72	8.0	6.4	56	49	36	22	33	59	26
11	20	20	60	7.8	6.3	54	241	36	20	32	48	22
12	20	20	52	8.0	6.2	52	174	34	21	32	46	21
13	20	21	55	8.3	6.5	50	159	38	21	32	42	20
14	20	26	54	8.3	6.9	47	368	41	34	31	58	19
15	21	26	47	7.9	10	48	198	38	123	56	56	18
16	22	24	38	7.6	18	44	158	36	382	64	48	18
17	32	23	34	7.7	31	42	139	33	139	41	47	18
18	25	22	36	8.4	52	40	113	34	91	37	43	18
19	22	22	29	9.6	86	37	99	33	69	34	40	17
20	20	22	19	11	61	36	89	32	60	28	31	18
21	18	21	16	14	49	35	76	31	54	24	26	18
22	19	21	15	15	90	34	79	30	53	22	25	17
23	19	22	14	16	149	32	82	31	44	25	24	17
24	22	21	13	17	128	31	71	32	332	26	24	17
25	33	16	11	18	334	32	63	31	243	52	22	28
26	32	17	9.8	19	503	32	61	28	137	677	23	611
27	28	22	9.3	18	321	31	58	27	106	189	39	489
28	28	19	9.2	17	248	28	63	28	88	165	36	228
29	26	21	9.6	15	---	30	59	30	76	150	100	163
30	25	20	10	13	---	29	60	27	71	98	51	133
31	26	---	10	10	---	27	---	23	---	70	42	---
TOTAL	700	673	950.9	347.7	2188.7	1673	2786	1100	2376	2374	2700	2195
MEAN	22.6	22.4	30.7	11.2	78.2	54.0	92.9	35.5	79.2	76.6	87.1	73.2
MAX	33	28	95	19	503	180	368	50	382	677	497	611
MIN	18	16	9.2	7.6	6.2	27	23	23	19	22	22	17
CFSM	.13	.13	.17	.06	.44	.30	.52	.20	.45	.43	.49	.41
IN.	.15	.14	.20	.07	.46	.35	.58	.23	.50	.50	.56	.46
AC-FT	1390	1330	1890	690	4340	3320	5530	2180	4710	4710	5360	4350

CAL YR 1980 TOTAL 18235.9 MEAN 49.8 MAX 716 MIN 9.2 CFSM .28 IN 3.81 AC-FT 36170
WTR YR 1981 TOTAL 20064.3 MEAN 55.0 MAX 677 MIN 6.2 CFSM .31 IN 4.19 AC-FT 39800

05464760 CEDAR RIVER NEAR BERTRAM, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°56'02", long 91°32'54", in SE1/4 NW1/4 sec.9, T.82 N., R.6 W., Linn County, Hydrologic Unit 07080206, at bridge on U.S. Highway 30, 0.2 mi (0.3 km) downstream from Big Creek, 1.7 mi (2.7 km) southwest of Bertram, and at mile 103.1 (165.9 km) above mouth of Iowa River.

DRAINAGE AREA.--6,955 mi^2 (18,013 km^2).

PERIOD OF RECORD.--Water years 1975-81 (discontinued).

REMARKS.--Water discharge estimated on basis of records at station (No. 05464500) 9.6 mi (15.4 km) upstream. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)
FEB												
17...	0900	1180	590	8.4	.5	14.2	99	23	3200	373	.51	1190
MAR												
18...	0830	1850	535	8.2	7.0	14.3	119	30	210	355	.48	1770
APR												
16...	1445	4420	535	7.7	13.0	10.2	98	85	390	316	.43	3770
MAY												
19...	1315	2850	560	8.7	16.0	--	--	28	K40	356	.48	2740
JUN												
22...	1000	4720	580	8.2	21.5	7.6	87	48	620	355	.48	4520
JUL												
15...	1630	3850	575	8.8	29.0	8.6	112	61	4500	368	.50	3830
AUG												
20...	0930	4330	540	8.2	23.0	10.0	115	68	K400	356	.48	4160
SEP												
08...	1000	5410	580	8.1	19.5	8.8	98	44	K1600	409	.56	5970

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
FEB												
17...	11	4.3	1.20	1.3	2.50	6.8	30	.490	3	0	20	.00
MAR												
18...	26	4.1	.180	2.2	2.40	6.5	29	.360	2	0	10	.00
APR												
16...	133	6.3	.130	2.5	2.60	8.9	39	.400	9	1	30	.00
MAY												
19...	39	5.2	.050	2.3	2.30	7.5	33	.300	5	0	0	.00
JUN												
22...	164	12	.100	1.9	2.00	14	62	.400	7	0	20	.00
JUL												
15...	130	5.4	.370	2.2	2.60	8.0	35	.450	4	0	30	.00
AUG												
20...	75	5.2	.030	2.6	2.60	7.8	35	.340	4	0	80	.00
SEP												
08...	16	6.3	.040	2.1	2.10	8.4	37	.340	4	0	30	>.01

05465000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41°24'36", long 91°17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080206, on right bank 10 ft (3 m) downstream from bridge on county highway G28, 3.4 mi (5.5 km) northeast of Conesville, 5.2 mi (8.4 km) downstream from Wapsinonoc Creek, 10.7 mi (17.2 km) upstream from mouth, and at mile 39.8 (64.0 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi² (20,163 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 581.95 ft (177.378 m) NGVD. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft (46 m) downstream on left bank at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.-- Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--42 years, 4,463 ft³/s (126.4 m³/s), 7.79 in/yr (198 mm/yr), 3,233,000 acre-ft/yr (3,990 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,800 ft³/s (2,010 m³/s) Apr. 2, 1961, gage height, 16.62 ft (5.066 m); maximum gage height, 16.85 ft (5.136 m) Apr. 12, 1965; minimum daily discharge, 250 ft³/s (7.08 m³/s) Nov. 28, 1955, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft (4.82 m), from information by local residents to Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 30	2115	*16,400	464	*12.04	3.670	Sept. 27	0745	12,400	351	10.88	3.316
Aug. 6	1330	13,400	379	11.20	3.414						

Minimum daily discharge, 840 ft³/s (23.8 m³/s) Dec. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6600	4140	2490	1900	1450	5740	2190	3850	4310	15500	7460	8970
2	5790	3980	2530	1950	1500	6740	2190	4790	5240	12900	7150	10400
3	5440	3720	2460	1950	1600	7790	2180	6730	5430	10500	8390	10600
4	5100	3720	2310	1800	1500	6630	2300	7280	4780	8950	8430	10600
5	4820	3670	1960	1600	1400	5470	2590	6450	4410	7890	8200	10000
6	4550	3530	1910	1550	1550	4580	2670	5840	4150	7410	12900	8840
7	4300	3470	2260	1550	1650	4160	3000	5190	3960	6750	12900	7830
8	4170	3400	3570	1500	1700	4030	3610	4970	3680	6100	12800	7070
9	4040	3280	4210	1450	1800	3800	4090	5090	3520	5590	10100	6650
10	3900	3220	3610	1400	1700	3500	4290	5370	3420	5140	8380	6060
11	3800	3140	3180	1300	1500	3320	4960	5200	3330	4770	7310	5440
12	3690	3100	2960	1300	1400	3190	5630	4940	3180	4500	6590	5070
13	3510	3060	2600	1350	1350	3070	5900	4690	3220	4200	6050	4830
14	3410	3050	2590	1350	1450	2970	6470	4540	4120	4300	5980	4580
15	3360	3050	2390	1350	1600	2880	6850	4390	3540	4360	8000	4260
16	3300	2980	2340	1400	1850	2800	6390	4140	7610	4710	7660	4100
17	3280	2880	2380	1400	2000	2730	5810	3890	9960	5320	5980	3980
18	3330	2790	2350	1350	2100	2670	5510	3760	9590	5990	5320	3790
19	3260	2800	2360	1300	2300	2630	5100	3620	8700	7060	5530	3570
20	3240	2770	1970	1350	2400	2590	4670	3540	7820	8780	5650	3380
21	3370	2730	1500	1400	2630	2540	4390	3430	6910	9310	5290	3280
22	3560	2680	1100	1500	3000	2490	4270	3280	6120	9860	4920	3140
23	3530	2700	840	1550	6880	2460	4200	3170	5590	10400	4520	3020
24	3570	2710	1050	1500	5880	2410	4100	3140	6530	10200	4250	2920
25	3590	2660	1300	1600	5200	2340	4020	3100	7830	9520	4150	2930
26	3520	2590	1450	1650	4640	2300	4080	3020	7650	9530	4130	5500
27	3590	2510	1600	1700	5050	2240	4080	3130	8840	9730	4080	11900
28	3930	2530	1700	1750	5500	2190	4020	4210	10500	8680	4030	8950
29	4560	2520	1800	1750	---	2200	3980	5190	12500	8520	4180	6610
30	4540	2490	1850	1700	---	2200	3910	5160	15400	8300	4270	5370
31	4380	---	1900	1550	---	2210	---	4690	---	7830	6360	---
TOTAL	125030	91870	68520	47750	72580	106970	127450	139790	191850	242600	210960	183610
MEAN	4033	3062	2210	1540	2592	3451	4248	4509	6395	7826	6805	6120
MAX	6600	4140	4210	1950	6880	7790	6850	7280	15400	15500	12900	11900
MIN	3240	2490	840	1300	1350	2190	2180	3020	3180	4200	4030	2920
CFSM	.52	.39	.28	.20	.33	.44	.55	.58	.82	1.01	.87	.79
IN.	.60	.44	.33	.23	.35	.51	.61	.67	.92	1.16	1.01	.88
AC-FT	248000	182200	135900	94710	144000	212200	252800	277300	380500	481200	418400	364200

CAL YR 1980 TOTAL 1841520 MEAN 5031 MAX 19800 MIN 840 CFSM .65 IN 8.80 AC-FT 3653000
WTR YR 1981 TOTAL 1608980 MEAN 4408 MAX 15500 MIN 840 CFSM .57 IN 7.69 AC-FT 3191000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2,550	2,550	1,690	2,020	2,650	7,230	8,620	5,520	6,710	5,340	3,010	2,700	4,220
RUNOFF (INCHES)	0.38	0.37	0.25	0.30	0.35	1.07	1.24	0.82	0.96	0.79	0.45	0.39	7.36
STD. DEVIATION	0.34	0.31	0.17	0.26	0.20	0.62	0.97	0.47	0.69	0.87	0.33	0.29	3.24
PERCENT OF ANNUAL	5.2	5.0	3.4	4.1	4.8	14	17	11	13	11	6.1	5.3	----
PRECIP. (INCHES)	2.6	1.7	1.6	1.3	1.0	2.1	3.4	3.7	4.3	3.6	3.0	3.4	31.6

05465500 IOWA RIVER AT WAPELLO, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°10'48", long 91°10'57", in NW1/4 SE1/4 sec.27, T.74 N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 mi (20.9 km) downstream from Cedar River, and at mile 16.0 (25.7 km).

DRAINAGE AREA.--12,499 mi^2 (32,372 km^2).

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929. WSP 1708: 1955(P), 1956.

GAGE.--Water-stage recorder. Datum of gage is 538.17 ft (164.034 m) NGVD; Oct. 1, 1914 to Apr. 15, 1934, nonrecording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 67.3 mi (108.3 km) upstream, since Sept. 17, 1958. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--67 years, 6,716 ft^3/s (190.2 m^3/s), 7.30 in/yr (185 mm/yr), 4,866,000 acre-ft/yr (6,000 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft^3/s (2,660 m^3/s) June 18, 1947, gage height, 16.14 ft (4.919 m), datum then in use; maximum gage height, 28.63 ft (8.726 m) Apr. 22, 1973; minimum daily discharge, 300 ft^3/s (8.50 m^3/s) Nov. 28, 1955, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,900 ft^3/s (564 m^3/s) July 1, gage height, 18.15 ft (5.532 m); minimum daily, 1,400 ft^3/s (39.6 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7900	5340	2970	2400	1900	10700	2680	5810	5500	19700	10200	9240
2	7190	5050	2990	2400	1750	10400	2780	5820	5590	18200	10000	11200
3	6750	4930	2940	2350	1500	11000	2820	7540	6540	15600	10500	11600
4	6440	4680	3050	2300	1450	9800	2750	8750	6050	13600	11800	11400
5	6040	4740	2870	2200	1400	8040	2930	8340	5600	12800	11200	10900
6	5650	4620	2570	2150	1450	6930	3350	7650	5220	11800	15200	9850
7	5310	4410	2790	2100	1900	6180	3440	6890	4970	10400	17000	8860
8	5120	4360	6220	2050	2300	5660	3930	6390	4640	9410	15800	7880
9	4960	4190	9400	2000	2800	5270	4590	6200	4380	8590	13900	7530
10	4810	4100	7310	1900	3350	4750	6040	6490	4160	7590	11700	7030
11	4630	4000	5740	1850	3300	4300	8580	6460	3970	7280	10300	6660
12	4490	3940	5050	1900	3000	4150	12900	6180	3770	6860	9120	6330
13	4380	3860	4440	1950	2700	4120	12700	5890	3660	6490	8230	5850
14	4110	3730	3830	1900	2600	4010	16100	5760	4350	6230	7900	5550
15	4000	3690	3680	1800	2500	3810	13100	5920	4540	6620	9140	5090
16	3980	3650	3530	1700	2450	3700	11500	5510	7120	6690	10900	4680
17	3920	3590	3600	1650	2500	3650	10200	5100	11900	6970	9350	4630
18	4150	3430	3700	1700	2650	3560	9170	4870	11900	7670	7860	4470
19	4220	3430	3500	1800	3000	3460	8460	4610	11100	8250	7200	4220
20	4120	3380	3300	1900	3300	3420	7580	4480	9840	9580	7350	4070
21	4080	3330	2900	2000	3700	3350	6770	4420	8930	10600	6790	3920
22	4300	3300	2500	2050	4090	3280	6560	4280	8070	10800	6260	3800
23	4300	3330	1900	2000	7530	3200	6370	4090	7440	11300	5790	3670
24	4250	3340	1550	2100	9770	3140	6210	4020	8640	11500	5460	3600
25	4250	3320	2000	2150	9110	3000	6140	4020	14400	11300	5160	3870
26	4430	3230	2100	2200	9830	2880	6040	4080	13700	11200	5150	6270
27	4480	3160	2200	2250	10200	2850	6010	4170	12900	12300	5010	13800
28	4710	3080	2250	2250	10500	2810	5870	4520	13400	11500	4770	13100
29	5210	3020	2300	2200	---	2770	5890	5970	14500	11300	5510	10700
30	5570	2990	2350	2150	---	2730	5970	6650	17300	11200	5780	9120
31	5490	---	2400	2100	---	2720	---	6190	---	10700	6700	---
TOTAL	153240	115120	107930	63450	112530	149640	203430	177070	244080	324030	277030	218890
MEAN	4943	3837	3482	2047	4019	4827	6781	5712	8136	10450	8936	7296
MAX	7900	5340	9400	2400	10500	11000	16100	8750	17300	19700	17000	13800
MIN	3920	2990	1550	1650	1400	2720	2680	4020	3660	6230	4770	3600
AC-FT	304000	228300	214100	125900	223200	296800	403500	351200	484100	642700	549500	434200

CAL YR 1980 TOTAL 2478820 MEAN 6772 MAX 20900 MIN 1550 AC-FT 4916000
WTR YR 1981 TOTAL 2146440 MEAN 5881 MAX 19700 MIN 1400 AC-FT 4257000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	3,680	3,970	2,720	3,470	4,740	11,800	13,400	9,330	11,400	8,410	4,690	4,210	6,820
RUNOFF (INCHES)	0.34	0.35	0.25	0.32	0.39	1.09	1.20	0.86	1.02	0.78	0.43	0.38	7.41
STD. DEVIATION	0.30	0.33	0.20	0.32	0.21	0.66	0.92	0.54	0.76	0.78	0.29	0.32	3.38
PERCENT OF ANNUAL	4.6	4.7	3.4	4.3	5.3	15	16	12	14	10	5.8	5.1	----
PRECIP. (INCHES)	2.5	1.6	1.5	1.3	1.0	2.3	3.6	3.4	4.2	4.1	3.0	3.2	31.8

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1978 to current year.
WATER TEMPERATURES: January 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--During periods of ice effect samples are collected in open water channel or through ice cover.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 810 micromhos Jan 23, 1978-Jan. 20, 1981; minimum daily, 280 micromhos Sept. 18, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,970 mg/L June 25, 1981; minimum daily mean, 1 mg/L Jan. 21,22, 1981.
SEDIMENT LOADS: Maximum daily, 193,000 tons (175,000 tonnes) June 25, 1981; minimum daily, 5.4 tons (4.9 tonnes) Jan. 21, 1981.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 810 micromhos Jan. 20; minimum daily, 280 micromhos Sept. 27.
WATER TEMPERATURES: Maximum daily, 31.0°C July 14; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,970 mg/L June 25; minimum daily mean, 1 mg/L Jan. 21,22.
SEDIMENT LOADS: Maximum daily, 193,000 tons (175,000 tonnes) June 25; minimum daily, 5.4 tons (4.9 tonnes) Jan. 21.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	640	---	---	790	---	400	---	500	---	---	560
2	---	640	690	---	---	---	400	---	---	---	---	400
3	---	650	---	---	---	---	---	---	560	---	---	450
4	600	650	---	---	---	---	---	480	500	---	---	500
5	600	---	700	---	---	480	440	460	500	480	500	520
6	---	620	---	---	790	510	450	500	---	---	410	---
7	600	620	---	---	790	520	450	520	---	520	410	---
8	600	610	600	---	---	520	---	---	540	540	---	600
9	600	610	640	---	790	540	---	540	560	550	500	620
10	---	600	---	---	790	550	---	540	---	560	540	620
11	---	---	630	650	800	560	---	560	---	560	550	580
12	600	600	640	800	800	580	380	560	560	---	580	---
13	600	600	630	800	800	---	390	570	560	560	560	560
14	600	600	690	800	800	560	---	550	---	560	610	520
15	600	590	---	800	750	580	---	580	470	500	580	520
16	600	590	690	800	720	---	---	---	470	---	480	450
17	---	---	690	800	---	560	---	---	400	530	520	500
18	560	---	690	800	---	560	510	---	420	---	580	500
19	560	---	---	800	---	520	520	530	---	480	580	500
20	540	600	---	810	---	510	550	480	480	460	520	420
21	520	600	---	800	---	500	580	460	---	420	520	440
22	---	600	---	800	---	500	560	---	520	430	---	420
23	500	600	740	800	---	470	---	---	---	---	460	420
24	500	600	---	800	---	460	540	---	450	440	460	400
25	490	600	---	790	---	440	540	---	360	---	420	440
26	470	---	---	---	---	430	540	420	---	---	420	400
27	580	---	750	---	---	420	500	---	500	---	420	280
28	580	---	750	---	---	420	---	420	---	500	420	340
29	590	600	750	790	---	410	---	---	---	---	460	460
30	---	600	---	---	---	410	---	460	---	---	500	---
31	620	---	---	790	---	410	---	470	---	---	520	---

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	8.0	---	---	.0	4.0	16.0	---	23.0	---	---	25.0
2	---	8.0	.5	---	---	---	15.0	---	---	---	---	24.0
3	---	8.0	---	---	---	3.0	---	---	25.0	---	---	24.0
4	15.0	8.0	---	---	---	3.0	---	17.0	26.0	---	---	23.0
5	15.0	---	3.0	---	---	3.0	11.0	16.0	27.0	27.0	26.0	22.0
6	---	10.0	---	---	.0	4.0	12.0	15.0	---	28.0	26.0	---
7	16.0	11.0	---	---	.0	4.0	15.0	16.0	---	28.0	24.0	---
8	17.0	11.0	4.0	---	---	5.0	---	---	27.0	29.0	---	22.0
9	17.0	11.0	3.0	---	.0	6.0	---	15.0	24.0	29.0	26.0	23.0
10	---	9.0	---	---	.0	6.0	---	14.0	---	30.0	26.0	24.0
11	---	---	3.0	.0	.0	7.0	---	15.0	---	30.0	26.0	22.0
12	13.0	9.0	3.0	.0	.0	8.0	14.0	15.0	27.0	---	25.0	---
13	13.0	9.0	2.0	.0	.0	---	14.0	14.0	28.0	30.0	25.0	26.0
14	13.0	9.0	1.0	.0	.0	9.0	---	13.0	---	31.0	28.0	25.0
15	14.0	8.0	---	.0	.0	10.0	---	16.0	25.0	29.0	28.0	23.0
16	14.0	6.0	1.0	.0	1.0	---	---	---	23.0	---	26.0	20.0
17	---	---	2.0	.0	---	8.0	---	---	23.0	29.0	25.0	19.0
18	15.0	---	1.0	1.0	---	7.0	15.0	---	24.5	---	25.0	19.0
19	14.0	---	---	1.0	.5	7.0	15.0	16.5	---	28.0	25.0	17.0
20	14.0	6.0	---	1.0	2.0	7.0	14.0	20.0	25.0	28.0	26.0	26.0
21	14.0	7.0	---	1.0	2.0	7.0	13.0	22.0	---	28.0	27.0	22.0
22	---	7.0	---	1.0	---	9.0	14.0	---	24.0	26.0	---	21.0
23	14.0	3.0	.0	1.0	2.0	11.0	---	---	---	---	27.0	19.0
24	15.0	3.0	---	1.0	2.0	12.0	13.0	---	23.0	26.0	27.0	18.0
25	16.0	3.0	---	1.5	3.0	10.0	14.0	---	23.0	---	28.0	16.0
26	16.0	---	---	---	3.0	11.5	18.0	20.0	---	---	27.0	18.0
27	9.0	---	1.0	---	5.0	13.0	21.0	---	25.0	---	26.0	19.0
28	8.0	---	1.0	---	4.0	14.0	---	25.0	---	21.0	24.0	18.0
29	6.0	5.0	1.0	.0	---	14.0	---	---	---	---	24.0	19.0
30	---	5.0	---	---	---	14.0	---	24.0	---	---	26.0	21.0
31	8.0	---	---	.0	---	16.0	---	24.0	---	---	26.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	139	2960	125	1800	20	160	7	45	10	51	562	16200
2	119	2310	128	1750	19	153	7	45	10	47	345	9690
3	106	1930	133	1770	27	214	8	51	10	40	337	10000
4	105	1830	134	1690	45	371	7	43	11	43	316	8330
5	98	1600	156	2000	27	209	5	30	16	60	264	5730
6	94	1430	146	1780	11	76	5	29	22	85	201	3760
7	89	1280	139	1660	110	829	5	28	30	154	137	2290
8	88	1220	141	1660	1070	18000	4	22	25	155	108	1650
9	83	1110	64	724	990	25100	6	32	13	98	109	1550
10	82	1060	67	742	305	6020	8	41	15	136	79	1010
11	81	1010	64	691	82	1270	7	35	21	187	72	836
12	81	982	50	532	73	995	7	36	18	146	67	751
13	80	946	51	532	45	539	11	58	23	168	65	723
14	77	854	34	342	32	331	12	62	30	211	62	671
15	76	821	32	319	28	278	7	34	20	136	66	669
16	80	860	29	286	37	353	4	18	33	218	75	749
17	78	826	26	252	61	593	6	27	41	277	69	680
18	74	829	24	222	58	579	5	23	45	322	71	682
19	72	820	21	194	60	567	5	24	139	1130	75	701
20	75	834	18	164	40	356	4	21	190	1690	73	674
21	77	848	21	189	32	251	1	5.4	518	5170	67	606
22	77	894	30	267	26	175	1	5.5	700	7730	64	567
23	78	906	25	225	14	72	3	16	1170	23800	77	665
24	104	1190	20	180	12	60	3	17	1360	35900	73	619
25	116	1330	18	161	11	59	3	17	1320	32500	73	591
26	112	1340	20	174	9	51	4	24	1360	36100	76	591
27	120	1450	22	188	13	77	4	24	1160	31900	85	654
28	132	1880	24	200	26	158	7	43	775	22000	74	561
29	136	1910	25	204	17	106	7	42	---	---	74	553
30	127	1910	22	178	10	63	8	46	---	---	77	568
31	126	1670	---	---	8	52	10	57	---	---	67	492
TOTAL	---	40840	---	21076	---	58107	---	1000.9	---	200454	---	73813

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	76	550	174	2730	375	5570	598	31800	602	16600	371	9260
2	94	706	166	2640	283	4270	658	32300	559	15100	440	13300
3	91	693	256	5210	416	7330	662	27900	541	15300	402	12600
4	79	587	394	9310	410	6700	508	22300	477	15200	318	9790
5	103	815	457	10300	335	5070	523	18100	362	10900	261	7680
6	169	1530	306	6320	280	3950	499	16900	1140	49400	232	6170
7	182	1690	202	3760	250	3350	438	12300	1020	46800	203	4860
8	179	1900	184	3170	215	2690	390	9910	427	18200	176	3740
9	231	2860	156	2610	195	2310	435	10100	338	12700	160	3250
10	303	4120	150	2630	195	2190	376	7710	298	9410	189	3590
11	570	8590	138	2410	190	2040	316	6210	278	7730	212	3810
12	4050	61300	116	1940	175	1780	300	5560	249	6130	193	3300
13	2450	80200	105	1670	165	1630	243	4260	251	5580	171	2700
14	2640	110000	118	1840	770	9040	191	3210	238	5080	150	2250
15	1520	53800	164	2620	1380	16900	509	9100	361	8910	143	1970
16	880	27300	148	2200	2060	28400	473	8540	747	22000	158	2000
17	610	16800	142	1960	2190	70400	382	7190	457	11500	139	1740
18	371	9190	140	1840	1170	37600	360	7460	285	6070	82	990
19	279	6370	137	1710	860	25800	342	7620	235	4570	112	1280
20	225	4600	136	1650	645	17100	450	11600	241	4780	129	1420
21	194	3550	134	1600	530	12800	511	14600	250	4580	129	1370
22	274	4850	132	1530	440	9590	460	13400	235	3970	120	1230
23	158	2720	129	1420	385	7730	415	12700	206	3220	115	1140
24	178	2980	126	1370	1800	42000	373	11600	190	2800	115	1120
25	166	2750	124	1350	4970	193000	335	10200	192	2670	150	1570
26	150	2450	480	5290	3080	114000	322	9740	206	2860	540	9140
27	147	2390	1000	11300	1160	40400	315	10500	270	3650	2560	95400
28	149	2360	1420	17300	840	30400	405	12600	261	3360	1150	40700
29	147	2340	1480	23900	739	28900	490	14900	500	7440	460	13300
30	175	2820	670	12000	637	29800	584	17700	352	5490	300	7390
31	---	---	500	8360	---	---	620	17900	347	6280	---	---
TOTAL	---	422811	---	153940	---	762740	---	404910	---	338280	---	268060

TOTAL LOAD FOR YEAR: 2746031.9 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)
OCT								
03...	1130	14.0	6860	106	1960	--	--	--
NOV								
04...	0850	7.5	4700	44	558	--	--	--
DEC								
03...	1000	.0	2800	12	91	--	--	--
29...	0930	.5	2300	34	211	--	--	--
MAR								
02...	1330	4.0	10300	336	9340	--	--	--
APR								
08...	1130	14.0	3830	170	1760	--	--	--
17...	1130	14.5	10300	432	12000	--	--	--
28...	1300	19.0	5870	151	2390	--	--	--
MAY								
27...	1030	21.0	4150	778	8720	55	65	77
JUN								
18...	1100	23.5	12100	1160	37900	51	67	75
24...	2030	23.0	10700	3310	95600	47	51	69
JUL								
02...	1530	25.0	18300	665	32900	48	55	66
AUG								
05...	1130	21.0	11200	388	11700	37	45	54
SEP								
02...	1030	22.0	11200	478	14500	42	49	56
30...	1045	19.0	8990	338	8200	--	--	--

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM (70347)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT								
03...	--	--	--	--	--	--	--	90
NOV								
04...	--	--	--	--	--	--	--	73
DEC								
03...	--	--	--	--	--	--	--	97
29...	--	--	--	--	--	--	--	65
MAR								
02...	--	--	--	--	--	--	--	70
APR								
08...	--	--	--	--	--	--	--	95
17...	--	--	--	--	--	--	--	96
28...	--	--	--	--	--	--	--	96
MAY								
27...	92	--	--	--	--	--	--	99
JUN								
18...	80	--	--	--	--	--	--	97
24...	83	--	--	--	--	--	--	99
JUL								
02...	77	92	93	94	98	99	100	--
AUG								
05...	63	82	83	84	99	100	--	--
SEP								
02...	70	--	--	--	--	--	--	100
30...	--	--	--	--	--	--	--	77

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT												
03...	1130	6860	10	--	--	4	39	76	91	98	100	--
MAR												
02...	1330	10300	9	0	1	3	39	91	98	99	100	--
APR												
08...	1130	3830	8	1	1	19	66	95	99	100	--	--
28...	1515	5720	8	--	0	4	41	83	93	96	98	100
MAY												
27...	1130	4150	8	--	0	6	38	81	92	97	99	100
JUN												
18...	1100	12100	8	0	1	3	36	81	93	98	100	--
JUL												
02...	1530	18300	10	0	1	7	43	80	94	99	100	--
AUG												
05...	1130	11200	9	1	2	6	36	76	92	97	99	100
SEP												
02...	1030	11200	7	--	0	3	32	76	92	98	100	--
30...	1045	8990	7	--	0	5	39	75	87	95	99	100

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
03...	1130	6860	609	7.8	14.0	25	9.6	94	--	110
DEC										
03...	1000	2800	610	8.2	.0	4.6	12.6	102	K20	K53
MAR										
02...	1330	10300	430	8.3	4.0	92	12.1	92	700	8000
APR										
28...	1300	5870	465	8.3	19.0	30	8.3	91	100	135
JUL										
02...	1530	18300	475	7.3	25.0	55	5.7	70	4000	3100
SEP										
02...	1030	11200	391	--	22.0	23	8.0	98	K6600	K5700

K Results based on colony count outside the acceptable range (non-ideal colony count).

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT 03...	280	74	83	21	11	7	.3	3.2	220	42
DEC 03...	270	51	69	24	17	12	.5	2.7	--	48
MAR 02...	200	--	53	16	11	10	.3	4.9	--	40
APR 28...	230	--	54	22	14	12	.4	2.5	--	45
JUL 02...	220	--	60	16	7.0	6	.2	3.4	--	5.0
SEP 02...	190	--	50	15	7.5	8	.3	3.3	--	23

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 03...	27	.3	13	367	356	.50	6800	5.2	.020	.02
DEC 03...	31	.3	4.9	372	350	.51	2810	4.7	.300	.36
MAR 02...	27	.2	9.4	263	267	.36	7310	8.4	.530	--
APR 28...	27	.3	3.4	290	278	.39	4600	4.5	.060	--
JUL 02...	19	.2	13	305	251	.41	16100	9.0	.070	--
SEP 02...	18	.2	10	357	228	.49	10800	4.0	.110	--

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)
OCT 03...	1.4	1.40	.20	1.2	6.6	29	.340	1.0	.210
DEC 03...	.90	1.20	.00	1.2	5.9	26	.240	.74	.050
MAR 02...	2.4	3.00	.70	2.3	11	50	.840	1.7	.230
APR 28...	2.9	3.00	1.8	1.2	7.5	33	.270	.83	.040
JUL 02...	2.6	2.70	1.7	1.0	12	52	.610	1.9	.180
SEP 02...	2.4	2.50	1.2	1.3	6.5	29	.470	1.4	.160

DATE	TIME	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 03...	1130	--	106	1960	90	--	--	11	1.9
DEC 03...	1000	1100	12	31	97	--	9.9	--	--
MAR 02...	1330	15000	336	9340	70	--	--	9.8	3.8
APR 28...	1300	48000	151	2390	96	--	--	5.2	3.7
JUL 02...	1530	15000	665	32900	--	92	22	--	--
SEP 02...	1030	76000	478	14500	100	--	--	5.7	.4

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
OCT										
03...	1130	6	5	200	100	100	1	--	<1	0
MAR										
02...	1330	6	3	200	100	100	1	0	2	20
APR										
28...	1300	3	2	200	100	100	0	--	<1	10
SEP										
02...	1030	6	4	200	100	91	0	--	<1	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT										
03...	0	0	0	<3	8	5	3	2400	--	<10
MAR										
02...	10	10	4	<3	15	10	5	5900	5900	40
APR										
28...	10	0	1	<3	12	9	3	2400	--	<10
SEP										
02...	0	0	3	0	25	22	3	9900	9900	24

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
OCT									
03...	11	10	1	200	200	2	.1	.1	.0
MAR									
02...	15	15	0	340	330	10	.3	.2	.1
APR									
28...	11	5	6	220	220	1	.1	.1	.0
SEP									
02...	16	9	7	540	530	9	.2	.2	.0

DATE	NICKEL, RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT									
03...	6	6	0	1	0	1	30	10	20
MAR									
02...	8	3	5	0	0	0	60	60	5
APR									
28...	6	6	0	1	0	1	60	--	<3
SEP									
02...	10	8	2	1	0	1	200	0	210

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	DEC 3,80	MAR 2,81	APR 28,81	JUL 2,81	SEP 2,81
TIME	1000	1330	1300	1530	1030
TOTAL CELLS/ML	1100	15000	48000	15000	76000
DIVERSITY: DIVISION	0.5	1.2	1.1	0.6	1.4
.CLASS	0.5	1.2	1.1	0.6	1.4
..ORDER	0.5	1.7	1.2	0.9	1.9
...FAMILY	0.7	2.2	1.4	1.2	2.2
....GENUS	0.7	2.3	1.7	1.2	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	110	1	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	18000°	39	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	380	3	260	1	*	0	1100	1
....CHODATELLA	--	-	--	-	--	-	--	-	860	1
....SELENASTRUM	--	-	--	-	--	-	--	-	2600	3
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	2600	3
....SCENEDESMUS	--	-	--	-	1100	2	760	5	2100	3
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	220	1	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	*	0	--	-	*	0	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	*	0	1700	11	23000°	48	180	1	3900	5
....MELOSIRA	*	0	270	2	--	-	97	1	22000°	29
....STEPHANODISCUS	--	-	220	1	3700	8	*	0	--	-
..PENNALES										
...DIATOMACEAE										
....DIATOMA	--	-	*	0	--	-	*	0	--	-
...FRAGILARIACEAE										
....SYNEDRA	*	0	220	1	--	-	*	0	*	0
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	1000	7	260	1	--	-	--	-
...NAVICULACEAE										
....NAVICULA	40	4	600	4	--	-	120	1	*	0
...NITZSCHIACEAE										
....NITZSCHIA	50	5	1100	8	260	1	170	1	860	1
...SURIRELLACEAE										
....CYMATOPLEURA	--	-	--	-	--	-	*	0	--	-
....SURIRELLA	10	1	270	2	260	1	*	0	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	260	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	1700	2
....ANACYSTIS	--	-	160	1	--	-	610	4	29000°	38
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	5200	7
....APHANIZOMENON	--	-	--	-	--	-	410	3	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	940°	89	8600°	57	--	-	12000°	82	3400	5
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	*	0	260	1	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...CERATIACEAE										
....CERATIUM	--	-	--	-	--	-	*	0	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'05", long 93°37'02", in NW1/4 SW1/4 sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi (4.0 km) north of Ames, 3.5 mi (5.6 km) downstream from Keigley Branch, 5.2 mi (8.4 km) upstream from Squaw Creek, and at mile 228.1 (367.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi^2 (816 km^2).

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as Skunk River near Ames.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M). WDR Iowa 1967: 1965. WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.61 ft (272.372 m) NGVD (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several diversions for irrigation above station. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--56 years, 150 ft^3/s (4.248 m^3/s), 6.47 in/yr (164 mm/yr), 108,700 acre-ft/yr (134 hm^3/yr); median of yearly mean discharges, 120 ft^3/s (3.40 m^3/s) 5.2 in/yr (132 mm/yr), 86,900 acre-ft/yr (107 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,630 ft^3/s (244 m^3/s) June 10, 1954, gage height, 13.66 ft (4.164 m); maximum gage height, 13.90 ft (4.237 m) May 20, 1944; no flow at times in 1934, 1937, 1953-57, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,880 ft^3/s (53.2 m^3/s) June 25, gage height, 5.61 ft (1.710 m) at 0030 hours, no other peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum daily, 0.10 ft^3/s (0.003 m^3/s) Feb. 11,12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	2.7	4.0	2.5	.45	9.0	8.9	9.2	4.7	237	15	27
2	1.2	3.5	2.8	2.6	.34	8.2	8.1	8.4	4.5	157	13	20
3	1.1	3.5	3.5	2.5	.32	7.6	17	8.1	4.4	119	15	17
4	1.0	3.3	3.3	2.2	.33	7.0	33	8.4	3.9	97	13	14
5	.92	3.1	3.8	1.9	.34	6.5	26	8.9	3.6	78	15	12
6	.85	2.8	3.3	1.2	.30	6.0	24	8.6	3.1	62	16	9.6
7	.78	2.5	7.6	.90	.25	5.8	19	9.0	2.9	50	12	21
8	.72	2.6	6.4	.58	.20	5.4	16	8.8	3.0	42	11	20
9	.70	2.9	5.3	.32	.16	5.4	15	7.8	2.7	64	9.1	12
10	.68	3.0	5.0	.23	.13	5.2	14	7.3	2.4	34	7.8	9.6
11	.65	3.3	4.4	.17	.10	5.2	31	6.9	2.1	27	6.8	8.2
12	.63	3.2	4.4	.17	.10	5.2	28	6.7	2.0	25	6.0	6.4
13	.61	3.2	4.1	.25	.20	5.2	112	7.3	1.9	21	5.6	5.7
14	.59	5.9	4.1	.25	.45	5.2	62	7.6	2.1	18	26	5.2
15	.58	4.2	4.1	.20	1.0	5.2	39	6.8	5.4	15	26	4.5
16	3.2	5.5	4.4	.20	6.0	5.2	34	6.0	346	14	15	4.6
17	3.3	3.9	4.5	.24	20	5.2	30	5.7	184	37	12	4.1
18	4.1	3.5	4.4	.29	90	5.2	25	7.9	97	22	8.4	3.6
19	2.6	4.5	3.5	.36	90	5.2	21	7.3	59	13	7.0	3.6
20	2.7	3.9	2.8	.28	58	5.3	19	5.2	40	11	5.9	3.6
21	1.9	3.7	2.1	.28	38	5.4	17	4.6	31	12	4.9	3.3
22	1.8	4.0	2.1	.40	26	5.5	19	3.9	24	10	4.4	3.0
23	2.1	4.1	2.1	.60	19	5.6	23	5.1	19	11	7.5	2.7
24	5.1	10	2.0	.90	13	6.0	20	6.3	1160	18	16	4.6
25	4.6	5.0	2.2	1.5	8.4	6.4	17	5.0	1600	30	11	10
26	3.7	3.5	1.7	1.4	9.0	6.4	15	7.3	683	39	5.4	20
27	3.7	3.4	1.3	1.1	10	6.0	13	9.3	388	21	5.6	19
28	3.5	3.4	1.4	.80	10	6.4	12	8.0	259	40	30	15
29	3.7	3.8	1.4	.59	---	8.0	11	7.2	232	34	55	12
30	3.8	3.7	2.0	.58	---	13	10	6.3	409	26	55	10
31	3.6	---	2.6	.58	---	10	---	5.7	---	19	38	---
TOTAL	65.81	115.6	106.6	26.07	402.07	196.9	739.0	221.5	5579.7	1403	478.2	311.3
MEAN	2.12	3.85	3.44	.84	14.4	6.35	24.6	7.15	186	45.3	15.4	10.4
MAX	5.1	10	7.6	2.6	90	13	112	9.3	1600	237	55	27
MIN	.58	2.5	1.3	.17	.10	5.2	8.1	3.9	1.9	10	4.4	2.7
CFSM	.007	.01	.01	.003	.05	.02	.08	.02	.59	.14	.05	.03
IN.	.01	.01	.01	.00	.05	.02	.09	.03	.65	.17	.06	.04
AC-FT	131	229	211	52	798	391	1470	439	11070	2780	949	617

CAL YR 1980 TOTAL 37831.01 MEAN 103 MAX 2280 MIN .58 CFSM .33 IN 4.47 AC-FT 75040
WTR YR 1981 TOTAL 9645.75 MEAN 26.4 MAX 1600 MIN .10 CFSM .08 IN 1.14 AC-FT 19130

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	61	61	41	43	84	289	251	266	392	206	73	59	153
RUNOFF (INCHES)	0.22	0.22	0.15	0.16	0.28	1.06	0.89	0.97	1.39	0.75	0.27	0.24	6.60
STD. DEVIATION	0.30	0.31	0.19	0.20	0.23	0.87	0.95	0.88	1.41	1.06	0.36	0.43	3.84
PERCENT OF ANNUAL	3.4	3.4	2.3	2.4	4.3	16	14	15	21	12	4.1	3.7	----
PRECIP. (INCHES)	2.0	1.1	1.0	0.8	0.9	1.9	2.8	4.2	4.9	4.1	3.4	2.7	30.0

05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'45", in NE1/4 NW1/4 sec.10, T.83 N., R.24 W., Story County, Hydrological Unit 07080105, on left bank 65 ft (20 m) downstream from Lincoln Way Bridge in Ames, 0.2 mi (0.3 km), revised, downstream from College Creek, and 2.4 mi (3.9 km), revised, upstream from mouth.

DRAINAGE AREA.--204 mi² (528 km²).

PERIOD OF RECORD.--May 1919 to April 1927, May 1965 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area. 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WDR Iowa. 1966: 1965, WDR IA-71-1: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft (268.529 m) NGVD (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi (1.0 km) upstream at different datum. Mar. 11, 1925, to Apr. 30, 1927, nonrecording gage at site 65 ft (20 m) upstream at datum about 4 ft (1 m) higher.

REMARKS.--Records good except those below 3.0 ft³/s (0.085 m³/s), which are fair, and those for October and winter period which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 116 ft³/s (3.285 m³/s), 7.72 in/yr (196 mm/yr), 84,040 acre-ft/yr (104 hm³/yr); median of yearly mean discharges, 89 ft³/s (2.52 m³/s), 5.9 in/yr (150 mm/yr), 64,500 acre-ft/yr (79.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s (320 m³/s) June 27, 1975, gage height, 14.00 ft (4.267 m), on basis of contracted-opening measurement; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918, reached a stage of 14.5 ft (4.42 m), from flood marks, site and datum used 1919-25, discharge, 6,900 ft³/s (195 m³/s). Flood of Mar. 1, 1965, reached a stage of 10.7 ft (3.26 m), from graph based on gage readings, at present site and datum, discharge, 4,200 ft³/s (119 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,060 ft³/s (30.0 m³/s) June 24, gage height, 4.26 ft (1.298 m), no peak above base of 1,600 ft³/s (45.3 m³/s); minimum daily, 0.02 ft³/s (0.001 m³/s) Jan. 1, Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	1.5	12	.02	.11	4.9	3.3	2.3	1.9	233	3.2	1.3
2	.28	1.3	7.2	.12	.84	3.7	2.2	2.0	1.8	117	16	1.1
3	.27	1.7	7.4	.16	.24	2.7	32	1.8	.75	83	5.0	1.6
4	.26	1.7	8.2	.29	.40	4.9	13	1.9	.75	83	2.6	1.5
5	.25	1.5	12	.48	.28	4.1	7.1	2.1	.64	62	42	.75
6	.23	1.3	12	.35	.39	2.6	6.5	1.5	.55	41	15	.54
7	.22	1.5	18	.42	.16	2.0	5.5	1.6	2.5	30	5.3	30
8	.21	1.5	17	.58	.09	2.1	5.9	1.8	.86	23	2.9	13
9	.20	2.0	14	.64	.05	3.0	5.6	1.4	.99	23	17	4.5
10	.19	2.9	14	.35	.03	2.0	3.9	.64	.64	17	7.1	2.4
11	.19	2.2	11	.20	.02	2.2	4.6	.86	.64	14	3.6	1.8
12	.19	2.6	11	.45	.15	1.8	7.6	1.4	.64	12	2.2	1.1
13	.20	6.6	5.5	1.2	1.5	1.8	22	.99	.45	8.5	6.7	.64
14	.49	2.9	3.2	.90	3.5	1.4	18	1.6	1.6	7.2	64	.64
15	.69	2.9	1.1	.70	9.5	1.3	11	.86	126	6.0	35	.22
16	4.8	2.6	1.3	.50	23	1.8	11	.75	231	5.5	12	.40
17	2.1	2.2	1.5	.60	55	1.5	7.1	1.9	79	4.5	6.3	.45
18	1.5	2.9	1.5	.70	61	1.5	5.8	2.6	40	3.2	3.8	.98
19	2.0	2.7	.75	.80	31	1.8	4.5	1.6	25	3.2	2.4	.45
20	.74	3.5	.64	.64	23	1.4	3.5	.99	16	3.6	1.8	.45
21	.70	3.6	.64	.66	24	1.5	2.9	.86	12	2.9	1.5	.75
22	.76	5.0	.75	.63	25	1.2	15	1.9	8.4	2.3	.98	.45
23	6.4	4.3	.75	.85	13	1.1	6.2	2.9	6.0	2.0	3.6	.98
24	4.3	3.3	.64	.64	7.5	1.5	6.1	1.4	721	2.2	1.3	4.4
25	2.8	8.9	.52	.64	8.2	1.7	5.0	.99	347	30	.75	3.2
26	1.9	8.9	1.0	1.1	8.2	1.5	5.3	.75	123	35	9.9	.98
27	2.4	9.0	.86	.86	8.1	1.8	3.9	.64	63	24	1.1	.86
28	2.3	10	.75	.41	6.7	1.6	2.9	.55	41	20	25	1.5
29	1.8	11	.44	.28	---	8.5	2.8	.99	258	16	3.9	.64
30	1.5	11	.10	.32	---	5.3	3.0	1.1	541	7.2	5.1	.28
31	1.7	---	.10	.15	---	3.6	---	1.3	---	4.5	2.4	---
TOTAL	41.87	123.0	165.84	16.64	310.96	77.8	233.2	43.97	2652.11	925.8	309.43	77.86
MEAN	1.35	4.10	5.35	.54	11.1	2.51	7.77	1.42	88.4	29.9	9.98	2.60
MAX	6.4	11	18	1.2	61	8.5	32	2.9	721	233	64	30
MIN	.19	1.3	.10	.02	.02	1.1	2.2	.55	.45	2.0	.75	.22
CFSM	.007	.02	.03	.003	.05	.01	.04	.007	.43	.15	.05	.01
IN.	.01	.02	.03	.00	.06	.01	.04	.01	.48	.17	.06	.01
AC-FT	83	244	329	33	617	154	463	87	5260	1840	614	154

CAL YR 1980 TOTAL 23645.48 MEAN 64.6 MAX 867 MIN .10 CFSM .32 IN 4.31 AC-FT 46900
WTR YR 1981 TOTAL 4978.48 MEAN 13.6 MAX 721 MIN .02 CFSM .07 IN .91 AC-FT 9870

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41°21'19", long 92°39'31", in NW1/4 SW1/4 sec.25, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080105, on right bank 400 ft (122 m) upstream from bridge on U.S. Highway 63, 0.3 mi (0.5 km) downstream from Painter Creek, 4.0 mi (6.4 km) north of Oskaloosa, 53.7 mi (86.4 km) upstream from confluence with North Skunk River, and at mile 147.3 (237.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi² (4,234 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Skunk River near Oskaloosa. Prior to October 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft (208.940 m) NGVD. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft (122 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--36 years, 865 ft³/s (24.50 m³/s), 7.18 in/yr (182 mm/yr), 626,700 acre-ft/yr (773 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/s) June 15, 1947, gage height, 21.26 ft (6.480 m), from floodmarks; maximum gage height, 22.52 ft (6.864 m) Feb. 3, 1973, backwater from ice; minimum daily discharge, 1.8 ft³/s (0.051 m³/s) Oct. 11-13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft (7.86 m), from floodmarks, discharge, 37,000 ft³/s (1,050 m³/s), from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,120 ft³/s (117 m³/s) June 24, gage height, 14.41 ft (4.392 m), no peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 23 ft³/s (0.65 m³/s) Feb. 6-9, 12-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	82	60	41	29	257	89	146	90	640	165	189
2	67	79	58	38	27	228	86	137	87	474	226	163
3	65	77	55	35	25	203	81	132	86	538	425	142
4	63	74	62	33	24	196	89	129	85	823	251	130
5	62	73	66	31	24	190	99	148	77	513	455	118
6	60	72	77	30	23	178	101	129	76	376	649	106
7	59	70	101	28	23	162	136	118	71	314	269	157
8	58	69	248	27	23	151	125	113	84	277	227	170
9	58	67	170	26	23	145	129	116	112	281	196	123
10	56	66	110	25	24	143	146	117	80	239	168	136
11	54	62	94	25	24	141	1910	112	74	232	154	128
12	51	60	76	25	23	138	670	108	70	236	148	111
13	50	59	80	25	23	135	482	105	67	244	139	95
14	49	69	70	24	25	129	461	117	63	265	133	90
15	51	79	64	24	28	123	347	120	264	317	140	83
16	55	76	60	24	64	120	320	108	236	343	184	78
17	65	69	55	24	130	116	301	97	184	382	206	74
18	69	65	52	24	210	113	265	92	152	366	165	71
19	70	62	50	24	330	107	241	88	252	335	138	70
20	65	60	46	25	420	103	224	84	206	246	122	63
21	59	60	45	25	352	101	211	77	171	184	112	67
22	56	60	44	25	358	100	215	75	154	163	104	64
23	54	62	45	26	576	99	243	80	128	156	99	63
24	59	65	46	26	1080	96	210	303	2500	163	116	63
25	88	70	47	27	1070	94	202	387	1880	199	100	86
26	100	68	49	29	511	93	188	185	1280	246	128	124
27	87	66	50	31	364	91	177	144	1150	319	294	119
28	93	64	52	32	302	89	180	120	886	390	184	92
29	93	62	50	32	---	88	207	111	1090	301	233	75
30	91	62	49	30	---	89	164	104	1740	237	161	70
31	85	---	45	29	---	93	---	96	---	192	212	---
TOTAL	2061	2029	2176	870	6135	4111	8299	3998	13336	9941	6303	3120
MEAN	66.5	67.6	70.2	28.1	219	133	277	129	445	321	203	104
MAX	100	82	248	41	1080	257	1910	387	2500	823	649	189
MIN	49	59	44	24	23	88	81	75	63	156	99	63
CFSM	.04	.04	.04	.02	.13	.08	.17	.08	.27	.20	.12	.06
IN.	.05	.05	.05	.02	.14	.09	.19	.09	.30	.23	.14	.07
AC-FT	4090	4020	4320	1730	12170	8150	16460	7930	26450	19720	12500	6190

CAL YR 1980 TOTAL 133495 MEAN 365 MAX 3910 MIN 44 CFSM .22 IN 3.04 AC-FT 264800
WTR YR 1981 TOTAL 62379 MEAN 171 MAX 2500 MIN 23 CFSM .11 IN 1.42 AC-FT 123700

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'15", in NE1/4 SE1/4 sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080106, on right bank 20 ft (6 m) downstream from bridge on State Highway 149, 1.2 mi (1.9 km) downstream from Cedar Creek, 2.2 mi (3.5 km) south of Sigourney, 4.0 mi (6.4 km) upstream from Bridge Creek, and 16.2 mi (26.1 km) upstream from confluence with South Skunk River.

DRAINAGE AREA.--730 mi² (1,890 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 651.53 ft (198.586 m) NGVD. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--36 years, 420 ft³/s (11.89 m³/s), 7.81 in/yr (198 mm/yr), 304,300 acre-ft/yr (375 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s (779 m³/s) Mar. 31, 1960, gage height, 25.33 ft (7.721 m); minimum daily, 0.1 ft³/s (0.003 m³/s) Oct. 7 to Nov. 15, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft (6.95 m), from floodmark, discharge, 14,500 ft³/s (411 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,290 ft³/s (178 m³/s) Apr. 12, gage height, 19.47 ft (5.934 m), at 0130 hours, no other peak above base of 3,800 ft³/s (108 m³/s); minimum daily, 13 ft³/s (0.37 m³/s) Jan. 17,18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	59	27	38	25	535	61	156	44	1740	75	114
2	21	50	23	36	23	337	59	137	41	507	66	87
3	19	45	20	33	21	246	56	127	39	277	74	59
4	19	42	19	26	19	211	94	120	40	279	104	46
5	18	37	23	24	17	191	112	122	38	401	110	40
6	19	31	24	23	18	171	113	128	36	285	634	33
7	19	32	80	22	19	146	95	114	38	202	660	37
8	19	31	769	21	18	129	82	104	35	162	203	72
9	19	30	573	19	18	119	81	100	34	140	128	91
10	19	30	282	18	18	117	87	98	36	121	99	57
11	18	27	153	16	17	115	1810	93	36	110	81	47
12	18	26	113	15	16	111	5430	89	35	102	70	39
13	18	25	84	15	16	107	1610	87	31	95	63	32
14	19	26	74	14	17	103	1330	91	30	85	58	28
15	19	28	64	14	21	99	785	93	96	164	57	26
16	23	31	58	14	25	95	587	91	161	167	53	24
17	26	37	54	13	35	90	485	81	221	92	49	23
18	36	34	52	13	110	87	397	73	153	78	47	20
19	36	28	50	15	190	82	333	68	96	150	42	19
20	34	25	47	17	170	76	288	66	72	194	37	19
21	31	22	42	19	150	74	247	62	61	106	34	18
22	30	21	38	22	140	72	236	60	59	80	32	16
23	25	26	36	24	160	70	244	59	56	69	28	15
24	33	31	34	26	200	67	256	61	1770	65	29	18
25	39	28	31	29	640	66	230	63	2620	63	34	52
26	45	20	30	32	820	66	194	84	2060	63	41	111
27	52	25	29	32	760	65	172	79	632	79	42	110
28	61	25	29	30	762	65	164	63	350	124	71	78
29	56	24	32	28	---	65	168	56	255	184	124	68
30	56	25	36	27	---	65	216	51	1300	122	100	53
31	58	---	39	26	---	63	---	47	---	92	92	---
TOTAL	926	921	2965	701	4445	3905	16022	2723	10475	6398	3337	1452
MEAN	29.9	30.7	95.6	22.6	159	126	534	87.8	349	206	108	48.4
MAX	61	59	769	38	820	535	5430	156	2620	1740	660	114
MIN	18	20	19	13	16	63	56	47	30	63	28	15
CFSM	.04	.04	.13	.03	.22	.17	.73	.12	.48	.28	.15	.07
IN.	.05	.05	.15	.04	.23	.20	.82	.14	.53	.33	.17	.07
AC-FT	1840	1830	5880	1390	8820	7750	31780	5400	20780	12690	6620	2880

CAL YR 1980 TOTAL 46028 MEAN 126 MAX 1050 MIN 17 CFSM .17 IN 2.35 AC-FT 91300
WTR YR 1981 TOTAL 54270 MEAN 149 MAX 5430 MIN 13 CFSM .20 IN 2.77 AC-FT 107600

05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA

LOCATION.--Lat. 40°55'20", long 91°40'10", in SE1/4 NW1/4 sec.28, T.71 N., R.7 W., Henry County, Hydrologic Unit 07080107, on left bank 30 ft (9.1 m) upstream from bridge on county highway H46, 3.0 mi (4.8 km) west of Oakland Mills, 2.9 mi (4.7 km) upstream from Wolf Creek, and 4.3 mi (6.9 km) upstream from mouth.

DRAINAGE AREA.--530 mi^2 (1,373 km^2).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1957 to 1977. July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 565.07 (172.233 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Occasional high-water measurements were made by Corps of Engineers in 1965, 1966, 1970 and 1974 and by U.S. Geological Survey in 1966 and 1967. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,010 ft^3/s (199 m^3/s) June 3, 1980, gage height, 18.26 ft (5.566 m); minimum daily, 1.0 ft^3/s (0.028 m^3/s) July 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 22, 1973 reached a stage of 24.09 ft (7.343 m), discharge not determined. Flood of June 1905 reached a stage approximately 2 feet higher from information by local resident.

EXTREMES FOR CURRENT PERIOD.--Peak discharges above base of 3,000 ft^3/s (85.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 9	0215	5,460	155	16.55	5.044	June 25	1330	3,680	104	13.57	4.136
Apr.14	1930	*6,610	187	*17.84	5.438	July 4	2300	4,020	114	14.17	4.319

Minimum daily discharge, 6.0 ft^3/s (0.17 m^3/s) Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	112	31	64	25	361	50	195	76	810	118	31
2	20	90	29	61	22	270	45	153	65	252	133	22
3	17	73	28	54	21	205	39	129	62	193	129	17
4	17	64	28	52	20	173	35	120	58	2350	84	14
5	17	59	30	43	18	242	40	123	55	3830	370	13
6	16	51	37	37	18	270	59	120	55	3380	421	12
7	16	46	300	35	19	200	53	96	46	1140	219	12
8	16	43	4730	34	18	155	42	86	43	494	110	11
9	16	43	5200	33	17	133	43	86	40	335	78	32
10	15	40	2030	33	17	123	613	101	37	258	62	48
11	14	38	476	32	16	120	985	123	38	212	51	26
12	13	34	292	31	16	114	2870	103	89	177	44	17
13	12	31	230	30	15	107	3780	83	437	160	41	13
14	11	33	198	31	15	103	6050	689	318	350	75	11
15	12	35	160	32	21	95	5830	1550	127	855	98	10
16	19	38	147	31	38	86	2670	536	1130	1720	59	9.6
17	26	36	130	32	62	86	900	270	825	648	54	12
18	62	35	117	33	110	80	669	361	275	291	37	8.5
19	43	33	100	35	100	72	486	466	168	509	30	7.4
20	30	31	90	36	92	69	401	232	123	843	25	6.7
21	23	30	80	37	84	62	318	157	135	361	22	6.3
22	18	30	74	38	88	59	335	129	1060	229	19	6.0
23	16	31	70	39	120	59	858	120	521	173	18	6.3
24	16	33	68	40	520	58	575	252	1150	141	18	13
25	26	37	62	41	1720	54	307	258	3350	127	17	91
26	58	33	60	42	1270	53	232	202	1520	188	17	1540
27	49	32	61	42	766	53	198	219	448	1010	19	1100
28	74	30	63	41	457	53	168	202	270	933	19	270
29	164	31	66	36	---	53	234	112	595	749	88	107
30	151	32	64	32	---	50	307	93	2070	299	49	67
31	116	---	64	28	---	51	---	105	---	168	41	---
TOTAL	1124	1284	15115	1185	5705	3669	29192	7471	15186	23185	2565	3539.8
MEAN	36.3	42.8	488	38.2	204	118	973	241	506	748	82.7	118
MAX	164	112	5200	64	1720	361	6050	1550	3350	3830	421	1540
MIN	11	30	28	28	15	50	35	83	37	127	17	6.0
CFSM	.07	.08	.92	.07	.39	.22	1.84	.46	.96	1.41	.16	.22
IN.	.08	.09	1.06	.08	.40	.26	2.05	.52	1.07	1.63	.18	.25
AC-FT	2230	2550	29980	2350	11320	7280	57900	14820	30120	45990	5090	7020

CAL YR 1980 TOTAL 104725.1 MEAN 286 MAX 6480 MIN 5.9 CFSM .54 IN 7.35 AC-FT 207700
WTR YR 1981 TOTAL 109220.8 MEAN 299 MAX 6050 MIN 6.0 CFSM .56 IN 7.67 AC-FT 216600

05474000 SKUNK RIVER AT AUGUSTA, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°45'13", long 91°16'40", in NE1/4 NE1/4 sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft (91 m) upstream from bridge on State Highway 394 at Augusta, 2.0 mi (3.2 km) upstream from Long Creek, and at mile 12.5 (20.1 km).

DRAINAGE AREA.--4,303 mi^2 (11,144 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1936, 1937-38 (M), 1942 (M). WSP 1438: Drainage area. WDR IA-71-1: 1966 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft (158.874 m) NGVD. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft (122 m) upstream at datum about 0.7 ft (0.2) higher. May 27, 1915, to Jan. 14, 1935, nonrecording gage at site 400 ft (122 m) upstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--67 years (1914-81), 2,345 ft^3/s (66.41 m^3/s), 7.40 in/yr (188 mm/yr), 1,699,000 acre-ft/yr (2,090 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,800 ft^3/s (1,892 m^3/s) Apr. 23, 1973, gage height, 27.05 ft (8.245 m); minimum daily, 7 ft^3/s (0.20 m^3/s) Aug. 27 to Sept. 1, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft (6 m), discharge, about 45,000 ft^3/s (1,270 m^3/s). Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 15,000 ft^3/s (425 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 9	0100	15,600	442	12.95	3.947	Apr. 15	1430	*28,300	801	*17.50	5.334

Minimum daily discharge, 120 ft^3/s (3.40 m^3/s) Feb. 12,13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	306	720	276	420	210	2980	404	1690	686	5350	1020	467
2	289	712	295	410	190	2500	382	1690	630	5260	850	418
3	262	646	217	400	180	1980	353	1360	568	3740	926	334
4	247	567	222	350	170	1640	348	1190	519	6380	689	383
5	239	501	284	280	170	1500	345	1140	479	7840	2060	337
6	227	448	331	270	160	1520	340	1060	499	6610	1720	272
7	222	411	1050	240	150	1390	428	966	484	4990	1420	246
8	214	381	10600	230	140	1210	488	916	450	2370	1470	247
9	207	368	14300	220	130	1070	469	921	426	1820	1620	245
10	201	346	9550	210	130	979	1010	1000	379	1480	1020	228
11	195	323	4320	200	130	917	2300	993	326	1260	702	281
12	183	288	2660	180	120	873	6080	918	1020	1170	561	332
13	167	278	2000	180	120	834	15200	840	2530	999	487	247
14	164	299	1660	170	130	794	24900	2540	1570	1360	759	213
15	170	294	1430	160	[illegible]	764	27900	3870	1040	2900	1410	288
16	196	285	1290	160	[illegible]	716	23800	2810	1910	4220	571	261
17	229	283	1180	160	210	[illegible]	8060	1750	3380	3130	436	237
18	248	273	1110	160	350	[illegible]	5090	2020	1980	1770	419	224
19	322	269	1000	160	580	[illegible]	3970	1600	1470	1380	342	216
20	279	270	900	150	1200	[illegible]	3170	1260	981	1940	324	206
21	233	268	820	150	1150	534	2530	942	1100	1470	342	197
22	207	254	750	160	1300	519	2540	780	2990	1280	299	188
23	194	266	680	170	1870	499	2890	794	1770	991	253	174
24	221	284	620	190	2460	480	2780	863	2700	812	233	179
25	246	290	560	200	4360	461	2170	1200	9870	710	220	314
26	244	293	520	220	5870	450	1860	904	10600	933	215	2180
27	303	275	470	240	5670	442	1660	1100	7340	1840	195	3460
28	407	285	450	270	3940	433	1490	1270	4920	2500	210	1990
29	515	283	420	270	---	440	1640	976	3620	2160	225	1350
30	751	272	410	260	---	441	1780	746	6900	1680	356	780
31	744	---	420	230	---	425	---	721	---	1310	496	---
TOTAL	8632	10732	60795	7070	31380	29297	146377	40830	73137	81655	21850	16494
MEAN	278	358	1961	228	1121	945	4879	1317	2438	2634	705	550
MAX	751	720	14300	420	5870	2980	27900	3870	10600	7840	2060	3460
MIN	164	254	217	150	120	425	340	721	326	710	195	174
CFSM	.07	.08	.46	.05	.26	.22	1.13	.31	.57	.61	.16	.13
IN.	.07	.09	.53	.06	.27	.25	1.27	.35	.63	.71	.19	.14
AC-FT	17120	21290	120600	14020	62240	58110	290300	80990	145100	162000	43340	32720

CAL YR 1980 TOTAL 584488 MEAN 1597 MAX 16200 MIN 164 CFSM .37 IN 5.05 AC-FT 1159000
WTR YR 1981 TOTAL 528249 MEAN 1447 MAX 27900 MIN 120 CFSM .34 IN 4.57 AC-FT 1048000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	939	1,180	672	1,400	2,520	4,240	4,090	3,550	4,450	2,590	1,520	1,400	2,370
RUNOFF (INCHES)	0.25	0.31	0.18	0.38	0.61	1.14	1.06	0.95	1.15	0.69	0.41	0.36	7.48
STD. DEVIATION	0.30	0.52	0.19	0.56	0.39	0.85	0.90	0.79	1.03	0.69	0.49	0.76	4.07
PERCENT OF ANNUAL	3.4	4.2	2.4	5.1	8.2	15	14	12	16	9.3	5.5	4.8	----
PRECIP. (INCHES)	2.7	1.6	1.6	1.4	1.1	2.3	3.5	3.3	4.5	3.5	3.6	3.6	32.8

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394, 300 ft (91 m) downstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 20, 1979, Feb. 12, 1980; minimum daily, 190 micromhos Aug. 10, 1977.
WATER TEMPERATURES: Maximum daily, 34.0°C July 20, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,550 mg/L June 25, 1981; minimum daily mean, 1 mg/L Mar. 8, 9, 12, 1978.
SEDIMENT LOADS: Maximum daily, 499,000 tons (453,000 tonnes) Mar. 21, 1978; minimum daily, 1.5 tons (1.4 tonnes) Feb. 8, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 850 micromhos Jan. 13, Feb. 12; minimum daily, 240 micromhos Aug. 5.
WATER TEMPERATURES: Maximum daily, 32.0°C July 12,13; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,550 mg/L June 25; minimum daily mean, 5 mg/L Jan. 31.
SEDIMENT LOADS: Maximum daily, 365,000 tons (331,000 tonnes) Apr. 14; minimum daily, 3.1 tons (2.8 tonnes) Jan. 31.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	460	650	700	750	640	500	520	600	520	360	440	570
2	500	650	670	750	670	530	520	580	540	390	440	600
3	530	625	690	700	670	545	520	560	580	290	420	540
4	530	625	690	750	650	560	540	600	580	310	380	525
5	540	650	700	750	700	580	560	600	580	310	240	520
6	570	650	720	770	700	580	580	625	600	320	400	520
7	540	650	650	750	690	600	580	600	600	400	440	500
8	540	660	380	750	725	600	580	580	540	480	440	540
9	530	670	360	770	725	620	570	540	560	520	480	545
10	540	640	390	800	750	620	440	550	600	540	380	480
11	540	670	500	800	700	630	420	560	600	580	380	520
12	560	650	550	810	790	650	410	540	460	580	480	525
13	560	625	540	850	800	650	280	560	380	600	460	540
14	560	580	580	840	800	650	260	440	500	560	360	560
15	560	570	600	800	780	660	280	420	420	360	320	560
16	580	570	625	825	710	660	360	480	525	260	440	560
17	560	560	650	825	675	660	500	560	420	290	480	540
18	600	580	650	800	650	660	540	550	420	400	460	520
19	625	600	670	750	540	650	540	600	500	400	460	520
20	600	600	670	750	450	640	580	560	580	440	460	520
21	650	600	700	750	450	640	600	600	580	400	460	525
22	600	600	700	750	450	600	580	540	520	400	480	525
23	580	625	725	750	440	580	600	540	420	440	520	520
24	600	650	700	725	440	560	600	560	400	460	540	520
25	625	600	750	690	420	520	580	570	280	390	560	520
26	650	650	750	690	420	520	600	540	300	390	540	380
27	670	670	750	690	460	500	600	560	310	320	550	300
28	700	670	800	675	460	480	600	480	330	320	560	360
29	650	700	750	650	---	480	625	580	430	460	550	380
30	670	700	750	650	---	480	610	580	320	440	550	---
31	650	---	725	650	---	500	---	550	---	460	560	---

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	8.0	5.0	1.0	.0	8.0	17.0	17.0	24.0	25.0	27.0	25.0
2	18.0	10.0	2.0	2.0	.0	5.0	18.0	18.0	24.0	26.0	25.0	24.0
3	14.0	11.0	1.0	.0	.0	5.0	18.0	19.0	26.0	25.0	27.0	25.0
4	14.0	11.0	1.0	.0	.0	5.0	13.0	18.0	27.0	24.0	29.0	26.0
5	16.0	9.0	4.0	.0	.0	5.0	13.0	17.0	28.0	25.0	25.0	25.0
6	18.0	12.0	9.0	.0	2.0	5.0	14.0	18.0	28.0	25.0	27.0	26.0
7	19.0	14.0	7.0	.0	1.0	5.0	17.0	19.0	27.0	27.0	25.0	21.0
8	21.0	13.0	4.0	.0	1.0	5.0	15.0	17.0	28.0	28.0	26.0	23.0
9	20.0	14.0	4.0	.0	1.0	7.0	17.0	17.0	26.0	30.0	28.0	23.0
10	18.0	12.0	2.0	.0	.0	7.0	17.0	16.0	27.0	30.0	27.0	26.0
11	15.0	9.0	3.0	.0	.0	8.0	17.0	17.0	24.0	30.0	27.0	27.0
12	15.0	10.0	5.0	1.0	.0	10.0	17.0	16.0	24.0	32.0	27.0	27.0
13	15.0	11.0	3.0	1.0	2.0	10.0	16.0	15.0	24.0	32.0	25.0	27.0
14	17.0	8.0	3.0	1.0	2.0	11.0	15.0	13.0	27.0	31.0	28.0	26.0
15	14.0	7.0	3.0	1.0	3.0	11.0	15.0	15.0	27.0	27.0	28.0	23.0
16	15.0	6.0	3.0	1.0	3.0	10.0	14.0	17.0	25.0	26.0	25.0	19.0
17	17.0	6.0	4.0	3.0	3.0	10.0	16.0	16.0	25.0	27.0	26.0	18.0
18	15.0	5.0	1.0	4.0	4.0	8.0	16.0	13.0	26.0	27.0	25.0	18.0
19	14.0	5.0	.0	3.0	4.0	8.0	16.0	17.0	25.0	27.0	25.0	19.0
20	16.0	5.0	.0	4.0	3.0	9.0	15.0	19.0	25.0	28.0	26.0	23.0
21	16.0	6.0	.0	2.0	4.0	9.0	14.0	21.0	25.0	28.0	26.0	23.0
22	15.0	6.0	.0	4.0	3.0	10.0	15.0	21.0	25.0	25.0	26.0	21.0
23	16.0	5.0	2.0	3.0	3.0	12.0	15.0	21.0	25.0	26.0	27.0	20.0
24	11.0	5.0	.0	2.0	5.0	14.0	15.0	21.0	24.0	27.0	27.0	19.0
25	8.0	5.0	.0	3.0	5.0	11.0	16.0	22.0	23.0	28.0	27.0	19.0
26	9.0	2.0	.0	2.0	5.0	13.0	19.0	22.0	23.0	25.0	27.0	19.0
27	6.0	2.0	.0	2.0	7.0	15.0	21.0	24.0	23.0	22.0	27.0	19.0
28	7.0	3.0	2.0	1.0	6.0	16.0	19.0	24.0	25.0	20.0	26.0	19.0
29	8.0	5.0	3.0	2.0	---	15.0	19.0	26.0	26.0	21.0	27.0	19.0
30	8.0	6.0	2.0	2.0	---	16.0	19.0	24.0	24.0	24.0	27.0	24.0
31	10.0	---	2.0	2.0	---	17.0	---	25.0	---	25.0	27.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
1	32	26	35	68	18	13	16	18	22	12	975	7840
2	39	30	36	69	16	13	14	15	30	15	595	4020
3	32	23	30	52	14	8.2	12	13	15	7.3	398	2130
4	36	24	28	43	14	8.4	8	7.6	14	6.4	254	1120
5	40	26	27	37	13	10	15	11	12	5.5	135	547
6	41	25	23	28	19	17	13	9.5	10	4.3	95	390
7	49	29	25	28	290	822	9	5.8	15	6.1	66	248
8	49	28	22	23	2320	86400	13	8.1	17	6.4	47	154
9	44	25	22	22	1890	73000	12	7.1	25	8.8	39	113
10	40	22	25	23	990	25500	14	7.9	19	6.7	38	100
11	44	23	21	18	580	6770	16	8.6	14	4.9	38	94
12	42	21	30	23	302	2170	37	18	15	4.9	40	94
13	46	21	51	38	148	799	43	21	10	3.2	46	104
14	45	20	48	39	78	380	30	14	15	5.3	49	105
15	50	23	43	34	41	158	25	11	10	3.8	48	99
16	53	28	45	35	26	91	19	8.2	10	4.1	47	91
17	60	37	45	34	21	67	21	9.1	14	7.9	59	108
18	66	44	51	38	17	51	22	9.5	20	19	53	93
19	62	54	48	35	17	46	19	8.2	40	63	81	133
20	75	56	45	33	21	51	14	5.7	362	1170	97	149
21	56	35	47	34	10	22	28	11	140	435	90	130
22	55	31	48	33	7	14	20	8.6	98	344	68	95
23	66	35	57	41	27	50	10	4.6	150	757	57	77
24	71	42	61	47	20	33	14	7.2	240	1590	56	73
25	68	45	57	45	45	68	14	7.6	994	12500	50	62
26	52	34	60	47	48	87	12	7.1	1800	28500	45	55
27	43	35	42	31	54	69	11	7.1	1770	27100	36	43
28	30	33	31	24	25	30	9	6.6	1440	15300	31	36
29	21	29	18	14	14	16	9	6.6	---	---	38	45
30	33	67	16	12	10	11	7	4.9	---	---	48	57
31	40	80	---	---	14	16	8	3.1	---	---	41	47
TOTAL	---	1051	---	1048	---	175740.6	---	290.7	---	87890.6	---	18452

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	38	41	247	1130	200	370	4860	70200	59	162	74	93
2	35	36	290	1320	196	333	3230	45900	150	344	67	76
3	36	34	294	1080	183	235	4060	41000	153	383	60	54
4	40	38	184	591	117	164	2590	44600	59	110	66	58
5	32	30	80	246	77	100	2520	53300	2110	19900	63	57
6	39	36	70	200	66	89	2100	37800	990	4600	62	46
7	45	52	89	232	75	98	1390	18700	368	1410	76	50
8	54	71	83	205	84	102	861	5510	409	1620	73	49
9	57	72	72	179	84	97	495	2430	420	1840	66	44
10	1380	3760	106	286	68	70	350	1400	320	881	59	36
11	2190	13600	98	263	59	52	262	891	251	476	67	51
12	3050	57600	72	178	1950	6370	201	535	200	303	71	54
13	5090	213000	53	120	3630	24800	138	372	151	199	67	45
14	5430	365000	1420	13200	800	3390	306	1120	500	1020	90	52
15	2180	184000	1650	17200	410	1150	1450	11400	1390	6730	131	102
16	1550	99600	720	5460	960	4950	2460	28000	110	170	103	73
17	1150	25000	287	1360	2440	22300	1480	12500	48	57	84	54
18	820	11300	344	1880	1100	5880	350	1670	40	45	84	51
19	520	5570	203	877	468	1860	89	332	34	31	86	50
20	380	3250	143	486	290	768	396	2070	30	26	80	44
21	310	2120	138	351	560	1960	165	655	31	29	80	43
22	615	4220	98	206	2440	19700	38	131	35	28	87	44
23	600	4680	85	182	1310	6260	20	54	36	25	98	46
24	448	3360	165	384	2400	17500	15	33	42	26	93	45
25	333	1950	179	580	8550	228000	25	48	42	25	148	125
26	208	1040	160	391	6120	175000	123	310	37	21	1270	8600
27	131	587	245	728	5050	100000	2440	16200	44	23	1440	13500
28	124	499	395	1350	3550	47200	1750	11800	46	26	523	2810
29	130	576	249	656	1990	19500	640	3730	45	27	302	1100
30	179	860	186	375	8470	158000	299	1350	56	54	180	379
31	---	---	185	360	---	---	92	325	80	107	---	---
TOTAL	---	981982	---	52055	---	846298	---	414176	---	40698	---	27851

TOTAL LOAD FOR YEAR: 2647533.9 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
OCT							
02...	1330	16.0	289	43	34	--	--
DEC							
03...	1430	.0	252	21	14	--	--
MAR							
03...	1200	3.5	1980	411	2200	78	80
APR							
07...	1435	18.0	458	49	61	--	--
13...	1300	16.0	15200	4820	198000	62	66
15...	1300	14.5	28100	1850	140000	73	81
MAY							
26...	1300	21.0	826	153	341	--	--
JUN							
25...	1730	23.0	10700	7590	219000	54	59
JUL							
01...	1830	24.0	4510	3270	39800	52	60
AUG							
04...	1730	31.0	640	60	104	--	--
SEP							
01...	1530	25.0	436	56	66	--	--
30...	1500	24.0	677	147	269	--	--

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT							
02...	--	--	--	--	--	--	99
DEC							
03...	--	--	--	--	--	--	87
MAR							
03...	85	99	--	--	--	--	99
APR							
07...	--	--	--	--	--	--	99
13...	72	82	97	98	99	100	--
15...	85	90	91	92	96	100	--
MAY							
26...	--	--	--	--	--	--	99
JUN							
25...	87	84	99	99	100	--	--
JUL							
01...	73	87	--	--	--	--	100
AUG							
04...	--	--	--	--	--	--	99
SEP							
01...	--	--	--	--	--	--	99
30...	--	--	--	--	--	--	99

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
MAR												
03...	1200	1980	5	0	5	42	84	95	98	99	100	--
APR												
13...	1330	15200	6	1	10	66	89	96	99	99	100	--
15...	1300	28100	4	0	12	72	91	92	93	94	95	100
JUL												
01...	1900	4610	4	0	6	57	86	94	96	98	100	--

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
02...	1330	289	415	8.5	16.0	11	8.6	90	K93	1560
DEC										
03...	1430	252	620	8.5	.0	4.8	15.5	107	<10	K32
MAR										
03...	1200	1980	460	8.2	3.5	160	12.2	92	K750	8500
APR										
27...	1630	1740	570	8.2	23.0	32	14.1	157	240	900
JUL										
01...	1830	4610	320	7.5	24.0	410	5.7	70	K25000	11000
SEP										
01...	1400	436	520	7.9	24.5	16	7.4	84	2900	2000

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
OCT										
02...	170	44	35	21	17	17	.6	3.9	130	58
DEC										
03...	270	61	69	24	24	16	.6	3.8	--	76
MAR										
03...	210	78	53	18	11	10	.3	6.3	--	54
APR										
27...	260	--	68	22	15	11	.4	2.9	--	58
JUL										
01...	130	--	35	9.6	5.8	9	.2	3.9	--	6.6
SEP										
01...	220	--	54	21	21	17	.7	5.0	--	51

K Results based on colony count outside the acceptable range (non-ideal colony count).

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 02...	23	.3	.5	241	240	.33	188	.78	.000	.00
DEC 03...	24	.3	4.2	371	360	.50	252	1.8	.070	.08
MAR 03...	26	.2	10	283	289	.38	1810	12	.610	--
APR 27...	17	.3	8.6	328	328	.45	1540	4.9	.050	--
JUL 01...	15	.3	9.5	197	173	.27	2400	7.2	.070	--
SEP 01...	28	.4	.8	320	290	.44	377	.17	.100	--

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT 02...	2.1	2.10	1.0	1.1	2.9	13	.180	.55	.030
DEC 03...	.70	.77	.00	.81	2.6	11	.130	.40	.050
MAR 03...	2.4	3.00	.80	2.2	15	66	.530	1.6	.140
APR 27...	1.6	1.70	.10	1.6	6.6	29	.200	.61	.040
JUL 01...	2.5	2.60	1.5	1.0	9.8	43	.840	2.6	.110
SEP 01...	1.8	1.90	.93	.97	2.1	9.2	.220	.67	.050

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT 02...	1330	--	43	34	99	--	19	--
DEC 03...	1430	47000	21	14	67	7.3	--	--
MAR 03...	1200	4000	411	2200	99	--	17	4.0
APR 27...	1630	59000	--	--	--	--	10	4.3
JUL 01...	1630	11000	3270	39800	100	70	--	--
SEP 01...	1400	15000	--	--	--	--	7.5	.5

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	DEC 3,80	MAR 3,81	APR 27,81	JUL 1,81	SEP 1,81
TIME	1430	1200	1630	1030	1400
TOTAL CELLS/ML	47000	4000	69000	11000	16000
DIVERSITY: DIVISION	1.5	1.5	0.9	1.0	1.6
.CLASS	1.5	1.5	0.9	1.0	1.6
..ORDER	1.6	1.8	1.5	1.2	1.8
...FAMILY	1.9	2.5	1.6	1.4	2.5
....GENUS	2.9	2.6	1.8	1.8	3.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	750	5
...MICRACTINIACEAE										
....MICRACTINIUM	510	1	180	4	--	-	--	-	190	1
...OOCYSTACEAE										
....ANKISTRODESMUS	1400	3	69	2	--	-	140	1	--	-
....CHLORELLA	1700	4	--	-	--	-	--	-	--	-
....CHODATELLA	*	0	--	-	--	-	--	-	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-	140	1	--	-
....DICTYOSPHAERIUM	510	1	--	-	2800	4	--	-	280	2
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	2500*	16
....KIRCHNERIELLA	640	1	--	-	830	1	69	1	93	1
....TETRAEDRON	--	-	--	-	--	-	--	-	93	1
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	6400	9	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	190	1
....SCENEDESMUS	1400	3	55	1	4100	7	--	-	2000	13
....TETRASTRUM	1000	2	--	-	--	-	--	-	560	4
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	69	2	2800	4	--	-	--	-
...VOLVOCACEAE										
....GONIUM	--	-	--	-	--	-	1100	10	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	6100	13	230	6	37000*	54	--	-	2700*	17
....MELOSIRA	3200	7	69	2	--	-	69	1	1800	11
....STEPHANODISCUS	--	-	--	-	--	-	--	-	93	1
....THALASSIOSIRA	900	2	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	93	1
...CYMBELLACEAE										
....CYMBELLA	--	-	*	0	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	*	0	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	69	1	--	-
....SYNEDRA	510	1	--	-	--	-	69	1	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	*	0	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	69	1	--	-
....NAVICULA	280	1	180	4	--	-	140	1	93	1
...NITZSCHIACEAE										
....NITZSCHIA	380	1	540	13	6400	9	550	5	280	2
...SURIRELLACEAE										
....CYMATOPLEURA	--	-	--	-	--	-	69	1	--	-
....SURIRELLA	*	0	300	8	--	-	140	1	93	1
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...MALLOMONADACEAE										
....MALLOMONAS	*	0	--	-	--	-	--	-	--	-
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	1600	10
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	2100	14
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	18000*	37	2000*	51	--	-	8200*	75	--	-
....SCHIZOTHRIX	9700*	21	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	110	3	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	180	4	--	-	--	-	*	0
....TRACHELOMONAS	640	1	--	-	410	1	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05474500 MISSISSIPPI RIVER AT KEOKUK, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°23'37", long 91°22'27", in SE1/4 SW1/4 sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi (0.3 km) upstream from bridge on U.S. Highway 136, 2.7 mi (4.3 km) upstream from Des Moines River, and at mile 364.2 (586.0 km) upstream from Ohio River.

DRAINAGE AREA.--119,000 mi^2 (308,000 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft (145.515 m) NGVD (levels by Corps of Engineers); Jan. 1, 1878, to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi (12.9 km) upstream; zero of gage was set to low-water mark of 1864, or 496.52 ft (151.339 m) NGVD.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records furnished by Union Electric Co.

AVERAGE DISCHARGE.--103 years, 62,840 ft^3/s (1,774 m^3/s), 7.15 in/yr (182 mm/yr), 45,380,000 acre-ft/yr (55,950 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 344,000 ft^3/s (9,740 m^3/s) Apr. 24, 1973; maximum gage height, 23.35 ft (7.117 m) Apr. 24, 1973; minimum daily discharge, 5,000 ft^3/s (142 m^3/s) Dec. 27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1851, reached a stage of 21.0 ft (6.40 m), present site and datum, estimated as 13.5 ft (4.11 m) at Galland, discharge, 360,000 ft^3/s (10,200 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 162,000 ft^3/s (4,590 m^3/s) Apr. 16; minimum daily, 24,100 ft^3/s (683 m^3/s) Feb. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126000	66300	34300	34000	30100	98200	36600	79300	44100	121000	59300	88300
2	126000	65200	35700	32000	27100	103000	42000	86600	47400	113000	58200	108000
3	130000	68600	37300	33700	24300	104000	46600	85400	58300	110000	64200	116000
4	129000	68000	37400	34200	25900	101000	52000	87900	54100	125000	72400	118000
5	126000	65900	36200	30400	27800	89000	59700	90000	54200	118000	79300	116000
6	107000	62500	36900	29500	28000	83500	60700	91000	54600	103000	89600	108000
7	79500	61700	37900	30600	25200	77100	77400	92200	40700	95000	91600	97600
8	69200	52500	65700	32800	26000	69300	79100	89700	32500	89000	87900	94700
9	64900	49100	78100	32600	25000	62000	87600	85300	39700	86800	81600	90100
10	60900	50400	75200	32500	26500	56600	97900	86000	42300	81400	73800	86300
11	54700	49800	61700	30400	25400	47700	102000	94600	41800	78500	73200	81000
12	52900	47400	54100	31000	25400	46300	116000	95800	42600	75100	67300	75600
13	50500	46800	46300	30500	24900	44500	139000	99000	46500	66600	63300	73100
14	47700	45500	44800	30200	24200	48500	157000	119000	60100	69300	59700	68300
15	48000	45400	42600	28600	25000	55700	161000	118000	73700	75600	81200	67100
16	48900	49700	36900	28300	24100	52800	162000	119000	92900	75100	100000	60100
17	51600	48100	34300	27500	27400	52000	145000	112000	94400	78400	100000	48600
18	47500	47800	37400	27300	30300	54200	127000	120000	101000	79900	91200	38000
19	46100	44400	42300	27300	43500	52000	114000	99500	83300	83900	72900	37500
20	49000	38100	31700	28000	55600	52700	95500	80600	75100	79800	71000	34800
21	57100	39500	26800	27500	55600	53100	85200	69300	78500	73600	68300	37500
22	52100	42200	28800	27900	55300	48600	86700	57100	90700	72300	63200	45500
23	53200	46300	36100	30700	68700	43300	79600	49900	87500	72500	53600	39400
24	51200	48000	40000	30400	96300	39500	81200	45200	98800	67200	47700	40700
25	53000	50600	34200	30400	114000	39100	81400	46200	122000	65700	43700	40100
26	57800	50100	34300	30700	116000	39800	84000	55600	118000	73400	42200	43400
27	58900	49100	34500	31500	106000	43300	79000	63900	115000	73800	44600	66900
28	57600	47200	33200	32500	96100	44000	75700	55600	109000	78200	51400	69200
29	60000	37800	29900	32200	---	40300	76100	54200	110000	68400	60200	69900
30	63100	33600	30500	31800	---	36200	77600	43300	120000	64100	60300	61500
31	63100	---	31300	29300	---	35400	---	43600	---	62000	71300	---
TOTAL	2142500	1517400	1266400	946300	1279700	1812700	2764600	2515800	2228800	2575600	2144200	2121200
MEAN	69110	50580	40850	30530	45700	58470	92150	81150	74290	83080	69170	70710
MAX	130000	68600	78100	34200	116000	104000	162000	120000	122000	125000	100000	118000
MIN	46100	33600	26800	27300	24100	35400	36600	43300	32500	62000	42200	34800
CFSM	.58	.43	.34	.26	.38	.49	.77	.68	.62	.70	.58	.59
IN.	.67	.47	.40	.30	.40	.57	.86	.79	.70	.81	.67	.66
AC-FT	4250000	3010000	2512000	1877000	2538000	3595000	5484000	4990000	4421000	5109000	4253000	4207000

CAL YR 1980 TOTAL 23529200 MEAN 64290 MAX 141000 MIN 22000 CFSM .54 IN 7.36 AC-FT 46670000
WTR YR 1981 TOTAL 23315200 MEAN 63880 MAX 162000 MIN 24100 CFSM .54 IN 7.29 AC-FT 46250000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	43,200	44,700	35,600	38,300	42,100	78,300	123000	102000	89,700	71,400	43,800	44,200	63,100
RUNOFF (INCHES)	0.42	0.42	0.35	0.37	0.37	0.76	1.15	0.99	0.84	0.69	0.42	0.41	7.20
STD. DEVIATION	0.24	0.21	0.12	0.17	0.12	0.29	0.44	0.42	0.36	0.33	0.18	0.18	1.89
PERCENT OF ANNUAL	5.9	5.9	4.9	5.2	5.2	11	16	14	12	9.7	5.9	5.7	----
PRECIP. (INCHES)	2.7	1.4	1.4	1.5	1.2	2.4	3.3	3.2	4.1	4.0	2.8	3.5	31.5

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on U.S. Highway 136, 0.2 mi (0.3 km) downstream from discharge station.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1977 to September 1981 (discontinued).
WATER TEMPERATURES: December 1977 to September 1981 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 612 micromhos Jan. 21, 1980; minimum daily, 310 micromhos Apr. 7, 1981.
WATER TEMPERATURES: Maximum daily, 28.0°C July 13-23, 1980; minimum daily, 0.0° C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 560 micromhos Feb. 17-20, 22,23, Mar. 17,18; minumum daily, 310 micromhos Apr. 7.
WATER TEMPERATURES: Maximum daily, 25.5°C Aug. 4; minumum daily, 0.0° C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	352	438	380	415	500	540	460	400	370	420	400	420
2	351	451	380	415	500	540	450	400	400	410	405	420
3	345	439	375	415	500	535	445	400	400	410	405	420
4	345	409	370	415	500	535	440	400	400	410	415	420
5	345	430	365	410	505	530	440	395	395	410	420	420
6	342	448	365	415	505	530	440	395	395	410	420	420
7	345	449	365	415	505	525	430	395	390	410	420	420
8	340	447	385	415	505	330	430	395	390	400	420	420
9	350	410	385	415	505	330	430	395	390	400	420	420
10	350	419	380	460	508	325	430	395	390	400	420	420
11	345	420	380	465	510	325	425	395	390	400	420	420
12	345	415	380	480	510	325	425	395	410	400	420	420
13	365	420	380	485	530	320	425	395	415	400	420	420
14	365	420	380	485	540	320	425	395	415	400	420	420
15	365	418	385	490	550	330	420	395	420	400	420	420
16	355	440	385	490	550	530	420	390	420	395	415	---
17	360	445	385	495	560	560	420	390	420	395	415	---
18	360	445	385	495	560	560	420	390	420	395	420	---
19	355	440	380	495	560	550	420	390	425	390	420	---
20	355	440	380	490	560	540	420	390	425	390	420	---
21	390	365	380	490	550	540	410	390	425	390	420	---
22	390	360	380	490	560	540	410	390	425	390	420	---
23	385	400	385	495	560	535	410	385	425	390	420	---
24	385	400	385	490	555	535	410	380	425	390	420	---
25	400	395	400	495	555	530	405	380	430	390	420	---
26	435	400	405	490	550	530	405	380	420	390	420	---
27	431	390	405	495	550	515	400	380	420	390	420	---
28	439	385	410	500	550	510	400	380	420	390	420	---
29	415	380	410	500	---	500	400	380	420	390	420	---
30	410	380	410	505	---	490	400	380	420	390	420	---
31	424	---	420	505	---	480	---	370	---	400	420	---

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	9.0	8.0	3.0	1.0	2.0	9.0	14.0	15.0	25.0	24.0	25.0
2	18.0	8.0	8.0	3.0	1.0	2.0	10.0	14.0	16.0	24.0	23.0	25.0
3	17.0	8.0	8.0	3.0	1.0	2.0	10.0	14.0	16.0	24.0	23.0	25.0
4	17.0	8.0	7.0	3.0	1.0	2.0	11.0	14.0	16.0	24.0	24.0	25.0
5	17.0	8.0	7.0	3.0	1.0	2.0	11.0	14.0	16.0	25.0	25.0	25.0
6	17.0	8.0	7.0	3.0	1.0	2.0	11.0	14.0	16.0	25.0	25.0	25.0
7	17.0	9.0	7.0	3.0	1.0	2.0	12.0	14.0	16.0	25.0	25.0	25.0
8	17.0	9.0	7.0	3.0	1.0	3.0	12.0	14.0	16.0	25.0	25.0	25.0
9	16.0	9.0	7.0	3.0	1.0	3.0	12.0	14.0	16.0	25.0	25.0	25.0
10	16.0	9.0	7.0	3.0	1.0	3.0	13.0	14.0	16.0	25.0	25.0	25.0
11	16.0	9.0	6.0	3.0	1.0	3.0	14.0	14.0	16.0	25.0	25.0	25.0
12	16.0	9.0	5.0	2.0	.0	3.0	14.0	14.0	18.0	25.0	25.0	25.0
13	15.0	9.0	5.0	2.0	.0	3.0	14.0	14.0	19.0	25.0	25.0	25.0
14	15.0	9.0	5.0	2.0	.0	3.0	14.0	14.0	20.0	25.0	25.0	25.0
15	15.0	9.0	5.0	2.0	.0	3.0	14.0	14.0	21.0	25.0	25.0	25.0
16	15.0	9.0	5.0	2.0	.0	3.0	14.0	14.0	21.0	25.0	25.0	---
17	15.0	9.0	5.0	2.0	.0	4.0	14.0	14.0	21.0	25.0	25.0	---
18	15.0	9.0	5.0	2.0	.0	4.0	14.0	14.0	22.0	25.0	24.0	---
19	15.0	9.0	5.0	2.0	.0	4.0	14.0	14.0	23.0	25.0	24.0	---
20	15.0	9.0	5.0	2.0	.0	5.0	14.0	14.0	23.0	25.0	24.0	---
21	14.0	10.0	5.0	2.0	1.0	5.0	14.0	14.0	24.0	25.0	24.0	---
22	14.0	10.0	5.0	2.0	1.0	5.0	14.0	14.0	24.0	25.0	24.0	---
23	14.0	10.0	5.0	2.0	1.0	5.0	14.0	14.0	24.0	25.0	24.0	---
24	14.0	9.0	5.0	2.0	1.0	5.0	14.0	14.0	24.0	25.0	25.0	---
25	13.0	9.0	4.0	2.0	1.0	5.0	14.0	14.0	25.0	25.0	25.0	---
26	10.0	9.0	4.0	2.0	1.0	5.0	14.0	14.0	24.0	25.0	25.0	---
27	9.0	8.0	4.0	3.0	1.0	6.0	14.0	14.0	24.0	25.0	25.0	---
28	9.0	8.0	4.0	3.0	1.0	6.0	14.0	14.0	25.0	25.0	25.0	---
29	9.0	8.0	4.0	2.0	---	7.0	14.0	14.0	25.0	25.0	25.0	---
30	9.0	8.0	4.0	2.0	---	8.0	14.0	14.0	25.0	25.0	25.0	---
31	9.0	---	3.0	2.0	---	9.0	---	15.0	---	24.0	25.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
02...	1100	126000	330	7.4	16.0	82	7.2	74	3300	2300
NOV										
04...	1245	64000	390	8.3	6.5	30	12.0	98	--	K28
DEC										
04...	1015	52000	380	8.2	.5	15	14.7	101	K42	K30
29...	1430	33000	435	8.1	.0	3.9	17.6	123	K90	K180
FEB										
06...	0900	32500	445	8.7	.0	4.2	18.7	131	82	110
MAR										
04...	0845	97600	355	7.6	4.0	50	11.3	88	K120	1500
APR										
07...	1030	75800	310	8.3	13.0	33	9.9	95	180	--
27...	1130	77200	370	8.2	15.0	34	10.0	106	140	440
MAY										
26...	1100	53500	330	8.0	19.0	21	7.1	78	K22	200
JUL										
01...	1200	123200	345	7.9	24.0	74	5.2	63	K1400	1400
AUG										
04...	1245	72100	396	8.0	25.5	20	6.2	73	120	130
SEP										
01...	1115	83000	400	7.9	24.5	24	5.9	71	145	K140

K Results based on colony count outside the acceptable range (non-ideal colony count).

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT 02...	150	25	35	14	7.3	10	.3	2.7	120	24
NOV 04...	180	24	44	18	8.5	9	.3	2.3	--	28
DEC 04...	180	32	43	18	9.2	10	.3	2.4	--	26
29...	200	25	49	20	10	10	.3	1.8	--	7.5
FEB 06...	210	41	50	21	13	12	.4	1.9	--	34
MAR 04...	160	39	39	15	9.2	11	.3	4.3	--	32
APR 07...	160	--	33	18	13	15	.5	3.0	--	29
27...	180	--	43	17	9.3	10	.3	3.0	--	35
MAY 26...	150	--	36	15	8.4	11	.3	2.4	--	28
JUL 01...	160	--	40	15	8.2	10	.3	2.4	--	3.0
AUG 04...	190	--	48	16	7.9	8	.3	2.8	--	<5.0
SEP 01...	190	--	46	19	9.3	9	.3	2.8	--	<5.0

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 02...	13	.1	9.6	205	185	.28	69700	1.6	.000	.00
NOV 04...	15	.2	6.0	228	220	.31	39400	1.2	.040	.05
DEC 04...	15	.2	4.2	229	214	.31	32200	1.2	.100	.12
29...	18	.1	5.9	283	230	.38	25200	2.2	.030	.04
FEB 06...	15	.1	5.1	265	249	.36	22400	1.5	.050	.06
MAR 04...	19	.1	8.2	222	212	.30	58500	3.2	.480	--
APR 07...	17	.1	.1	202	199	.27	41300	.35	.070	--
27...	23	.2	2.2	227	219	.31	47300	1.9	.110	--
MAY 26...	14	.1	.8	298	175	.41	43000	1.0	.150	--
JUL 01...	28	.2	6.7	207	193	.28	68900	3.2	.060	--
AUG 04...	15	.6	11	235	204	.32	45700	2.6	.240	--
SEP 01...	22	.2	6.2	235	--	.32	52700	1.2	.180	--

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)
OCT 02...	1.3	1.30	.54	.76	2.9	13	.380	1.2	.160
NOV 04...	.78	.82	.08	.74	2.0	8.9	.360	1.1	.300
DEC 04...	.69	.79	.00	.82	2.0	8.8	.170	.52	.190
29...	1.2	1.20	.00	1.2	3.4	15	.150	.46	.070
FEB 06...	1.5	1.50	.65	.85	3.0	13	.150	.46	.030
MAR 04...	2.2	2.70	.90	1.8	5.9	26	.400	1.2	.190
APR 07...	2.1	2.20	1.6	.60	2.6	11	.260	.80	.060
27...	1.4	1.50	.50	1.0	3.4	15	.240	.74	.070
MAY 26...	1.5	1.60	.66	.94	2.6	12	.220	.67	.090
JUL 01...	1.6	1.70	.76	.94	4.9	22	.350	1.1	.120
AUG 04...	1.2	1.40	.10	1.3	4.0	18	.230	.71	.180
SEP 01...	.81	.99	.00	1.6	2.2	9.7	.240	.74	.000

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	PHYTO-PLANKTON, TOTAL (CELLS PER ML) (60050)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT								
02...	1100	--	188	64000	99	15	--	--
NOV								
04...	1245	20000	55	9500	98	--	--	--
DEC								
04...	1015	--	24	3370	96	--	11	3.9
29...	1430	--	19	1690	85	16	--	--
FEB								
06...	0900	--	7	614	90	--	11	1.1
MAR								
04...	0845	14000	120	31600	98	--	--	--
APR								
07...	1030	--	80	16400	94	12	--	--
27...	1130	33000	100	20800	95	--	8.3	2.1
MAY								
26...	1100	18000	43	6210	97	16	--	--
JUL								
01...	1200	4000	347	115000	99	18	--	--
AUG								
04...	1245	1800	39	7590	100	--	8.7	.5
SEP								
01...	1115	60000	59	13200	100	9.7	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA) (01006)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR) (01031)
DEC										
04...	1015	2	1	0	0	40	0	<1	0	0
FEB										
06...	0900	1	1	100	40	60	0	<1	10	0
APR										
27...	1130	3	2	100	40	60	0	<1	10	10
AUG										
04...	1245	4	2	100	30	70	0	<1	0	0

DATE	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU) (01041)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE) (01044)	IRON, DISSOLVED (UG/L AS FE) (01046)
DEC									
04...	0	2	<3	8	5	3	790	760	30
FEB									
06...	10	0	<3	11	7	4	360	310	50
APR									
27...	0	2	<3	8	5	3	2700	2700	20
AUG									
04...	10	3	<3	4	3	1	1400	1400	12

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB) (01050)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN) (01054)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG) (71895)	MERCURY DISSOLVED (UG/L AS HG) (71890)
DEC									
04...	50	50	0	80	80	2	.0	.0	.0
FEB									
06...	15	15	0	60	40	20	.1	.0	.1
APR									
27...	7	1	6	200	200	2	.1	.0	.1
AUG									
04...	5	2	3	110	100	8	.1	.1	.0

DATE	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI) (01066)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
DEC									
04...	5	5	0	0	0	0	40	40	5
FEB									
06...	3	0	3	0	0	0	20	0	20
APR									
27...	7	7	0	0	0	0	20	10	10
AUG									
04...	4	2	2	0	0	0	50	6	44

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	NOV 4,80		MAR 4,81		APR 27,81		MAY 26,81	
TIME	1245		0845		1130		1100	
TOTAL CELLS/ML	20000		14000		33000		18000	
DIVERSITY: DIVISION	0.6		0.2		0.7		1.4	
.CLASS	0.6		0.2		0.7		1.4	
..ORDER	0.7		1.1		1.3		2.1	
...FAMILY	0.8		1.4		1.5		2.3	
....GENUS	1.8		1.9		2.6		2.9	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...MICRACTINIACEAE								
....GOLENKINIA	100	1	--	-	--	-	--	-
....MICRACTINIUM	400	2	--	-	--	-	440	2
...OOCYSTACEAE								
....ANKISTRODESMUS	100	1	110	1	--	-	*	0
....DICTYOSPHAERIUM	--	-	--	-	860	3	*	0
....OOCYSTIS	--	-	--	-	--	-	320	2
....SELENASTRUM	100	1	--	-	--	-	*	0
....TREUBARIA	--	-	--	-	--	-	*	0
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	1700	5	--	-
....SCENEDESMUS	1000	5	--	-	2600	8	490	3
....TETRASTRUM	--	-	--	-	860	3	160	1
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	110	1	640	2	160	1
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	2400	12	8900*	64	9700*	29	1800	10
....MELOSIRA	12000*	63	1000	7	1300	4	3200*	18
....STEPHANODISCUS	2500	13	--	-	12000*	36	930	5
..PENNALES								
...DIATOMACEAE								
....DIATOMA	--	-	460	3	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	1800	13	3200	10	730	4
....SYNEDRA	--	-	230	2	--	-	*	0
...NITZSCHIACEAE								
....NITZSCHIA	100	1	570	4	430	1	*	0
...SURIRELLACEAE								
....SURIRELLA	--	-	340	2	430	1	*	0
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	100	1	--	-	--	-	--	-
ORGANISM	/ML	CENT	/ML	CENT	/ML	CENT	/ML	CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	--	-	--	-	--	-	5000*	27
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	4400*	24
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	100	1	110	1	--	-	--	-
....TRACHELOMONAS	200	1	110	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	100	1	--	-	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	JUL 1,81	AUG 4,81	SEP 1,81
TIME	1200	1245	1115
TOTAL CELLS/ML	4000	1800	60000
DIVERSITY: DIVISION	1.6	0.9	0.8
.CLASS	1.6	0.9	0.8
..ORDER	2.4	1.0	0.9
...FAMILY	2.9	1.5	1.0
....GENUS	3.7	2.3	1.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...MICRACTINIACEAE						
....MICRACTINIUM	--	-	58	3	410	1
...OOCYSTACEAE						
....ANKISTRODESMUS	*	0	14	1	*	0
....DICTYOSPHAERIUM	55	1	200	11	2800	5
....FRANCEIA	27	1	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	370	1
....KIRCHNERIELLA	160	4	--	-	--	-
....OOCYSTIS	*	0	--	-	--	-
....TREUBARIA	*	0	--	-	--	-
...SCENEDESMACEAE						
....CRUCIGENIA	210	5	--	-	--	-
....SCENEDESMUS	380	10	230	13	1000	2
....TETRASTRUM	55	1	29	2	*	0
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	41	1	--	-	--	-
..ZYGNEMATALES						
...DESMIDIACEAE						
....STAURASTRUM	27	1	--	-	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	210	5	780*	43	2600	4
....MELOSIRA	660*	17	420*	23	1700	3
....STEPHANODISCUS	110	3	43	2	*	0
..PENNALES						
...ACHNANTHACEAE						
....COCCONEIS	*	0	--	-	--	-
...FRAGILARIACEAE						
....SYNEDRA	--	-	14	1	--	-
...NAVICULACEAE						
....NAVICULA	69	2	--	-	--	-
...NITZSCHIACEAE						
....HANTZSCHIA	*	0	--	-	--	-
....NITZSCHIA	96	2	29	2	*	0
...SURIRELLACEAE						
....CYMATOPLEURA	*	0	--	-	--	-
....SURIRELLA	41	1	--	-	*	0
.CHRYSOPHYCEAE						
..CHRYSOMONADALES						
...OCHROMONADACEAE						
....OCHROMONAS	--	-	--	-	*	0
.XANTHOPHYCEAE						
..HETEROCOCCALES						
...CENTRITRACTACEAE						
....CENTRITRACTUS	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	140	3	--	-	*	0
....ANACYSTIS	590	15	--	-	49000*	81
....GOMPHOSPHAERIA	--	-	--	-	920	2
..HORMOGONALES						
...NOSTOCACEAE						
....APHANIZOMENON	210	5	--	-	--	-
...OSCILLATORIACEAE						
....OSCILLATORIA	780*	20	--	-	460	1
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	*	0
....TRACHELOMONAS	*	0	--	-	*	0

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05476500 DES MOINES RIVER AT ESTHERVILLE, IA

LOCATION.--Lat 43°23'51", long 94°50'38", in SW1/4 SE1/4 sec.10, T.99 N., R.34 W., Emmet County, Hydrologic Unit 07100002, on right bank in city park, 1,200 ft (366 m) downstream from bridge on State Highway 9 at Estherville, 0.1 mi (0.2 km) upstream from School Creek, 2.3 mi (3.7 km) upstream from Brown Creek, and at mile 404.2 (650.4 km).

DRAINAGE AREA.--1,372 mi^2 (3,553 km^2).

PERIOD OF RECORD.--October 1951 to current year. Prior to November 1951, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,247.55 ft (380.253 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--30 years, 301 ft^3/s (8.524 m^3/s), 2.98 in/yr (76 mm/yr), 218,100 acre-ft/yr (269 hm^3/yr); median of yearly mean discharges, 220 ft^3/s (6.23 m^3/s), 2.2 in/yr (56 mm/yr), 159,000 acre-ft/yr (196 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft^3/s (453 m^3/s) Apr. 12, 1969, gage height, 17.68 ft (5.389 m), from floodmark; no flow Jan. 16-18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,530 ft^3/s (43.3 m^3/s) June 15, gage height, 6.23 ft (1.899 m) at 1000 hours, no other peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum daily, 8.0 ft^3/s (0.22 m^3/s)) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	37	42	16	12	67	87	35	15	125	63	51
2	42	39	31	16	11	63	89	33	16	100	70	51
3	39	39	36	15	9.6	47	99	40	16	93	63	48
4	41	39	37	15	9.6	71	94	55	16	86	61	39
5	40	36	36	15	9.8	46	76	57	14	74	76	35
6	35	39	35	14	9.8	57	67	55	13	64	76	31
7	34	40	33	15	9.6	46	65	49	13	55	63	40
8	33	36	32	14	9.6	46	65	42	12	48	54	41
9	32	36	32	13	9.6	45	64	42	11	41	49	39
10	30	33	31	13	9.5	43	62	37	12	36	43	36
11	30	32	30	11	9.0	42	53	33	11	33	40	30
12	28	32	29	9.8	8.8	42	50	33	20	29	36	26
13	28	33	28	9.8	8.8	37	50	35	503	25	33	23
14	29	33	28	9.6	9.0	35	53	32	681	25	46	22
15	28	33	27	9.4	13	35	46	30	1340	26	49	19
16	34	33	29	9.2	16	33	42	28	708	25	46	17
17	44	32	30	9.2	35	32	44	25	512	32	67	14
18	40	28	30	9.2	69	31	43	24	364	34	56	14
19	38	34	29	9.4	73	30	43	22	273	23	50	16
20	41	35	25	9.4	59	28	41	21	224	41	52	14
21	37	34	24	9.4	71	26	54	20	190	46	40	11
22	36	36	22	9.4	79	24	52	20	165	97	31	12
23	38	37	21	10	53	24	48	30	139	236	27	12
24	39	31	20	11	49	26	52	32	213	264	24	11
25	37	29	18	12	51	25	55	24	197	205	23	11
26	40	35	17	13	45	24	50	22	150	177	22	12
27	38	40	15	13	72	23	47	22	126	141	33	12
28	37	41	16	13	63	24	43	22	120	107	57	8.8
29	34	41	16	13	---	36	39	20	249	87	67	8.1
30	38	42	17	13	---	69	38	19	172	73	65	8.0
31	36	---	18	12	---	89	---	17	---	64	58	---
TOTAL	1123	1065	834	370.8	883.7	1266	1711	976	6495	2512	1540	711.9
MEAN	36.2	35.5	26.9	12.0	31.6	40.8	57.0	31.5	217	81.0	49.7	23.7
MAX	47	42	42	16	79	89	99	57	1340	264	76	51
MIN	28	28	15	9.2	8.8	23	38	17	11	23	22	8.0
CFSM	.03	.03	.02	.009	.02	.03	.04	.02	.16	.06	.04	.02
IN.	.03	.03	.02	.01	.02	.03	.05	.03	.18	.07	.04	.02
AC-FT	2230	2110	1650	735	1750	2510	3390	1940	12880	4980	3050	1410

CAL YR 1980 TOTAL 118274.0 MEAN 323 MAX 2000 MIN 15 CFSM .24 IN 3.21 AC-FT 234600
WTR YR 1981 TOTAL 19488.4 MEAN 53.4 MAX 1340 MIN 8.0 CFSM .04 IN .53 AC-FT 38660

05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'06", in SE1/4 SW1/4 sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002, on left bank 5 ft (2 m) downstream from First Avenue in city of Humboldt, about 700 ft (213 m) below dam, 3.2 mi (5.1 km) upstream from Indian Creek, 3.9 mi (6.3 km) upstream from East Fork Des Moines River, and at mile 334.3 (537.9 km).

DRAINAGE AREA.--2,256 mi² (5,843 km²).

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as West Fork Des Moines River at Humboldt.

GAGE.--Water-stage recorder. Datum of gage is 1,053.54 ft (321.119 m) NGVD. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for winter period, which are poor. Daily nonrecording gage readings available in district office for period Mar. 7, 1940, to Sept. 30, 1964. Discharge not published for this period because of extreme regulation at dam 700 ft (213 m) upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low flow discharges occasionally affected by minor regulation. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--17 years, 748 ft³/s (21.18 m³/s), 4.50 in/yr (114 mm/yr), 541,900 acre-ft/yr (668 hm³/yr); median of yearly mean discharges, 600 ft³/s (17.0 m³/s) 3.6 in/yr (91 mm/yr), 435,000 acre-ft/yr (536 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) Apr. 14, 1969, gage height, 15.40 ft (4.694 m); minimum daily, 13 ft³/s (0.37 m³/s) Nov. 12, 1976, Jan. 12 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft (3.72 m), discharge, 11,000 ft³/s (312 m³/s) at present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,590 ft³/s (73.3 m³/s) June 17, gage height, 6.45 ft (1.966 m), no peak above base of 2,800 ft³/s (79.3 m³/s); minimum daily, 54 ft³/s (1.53 m³/s) Feb. 11-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316	276	222	110	83	174	162	139	360	1790	468	741
2	310	255	89	111	68	161	165	135	335	1460	888	657
3	290	244	95	106	68	142	214	135	320	1190	1290	580
4	285	240	167	99	69	150	231	170	305	1010	979	524
5	276	236	186	97	70	149	240	216	285	895	790	475
6	264	229	198	99	69	152	247	335	264	790	734	434
7	257	243	192	103	68	140	233	335	248	685	636	416
8	252	240	179	88	68	144	223	320	236	601	538	360
9	244	238	169	83	66	145	212	305	240	517	475	340
10	236	220	150	76	56	138	204	315	248	447	416	325
11	220	213	146	75	54	134	197	264	236	386	365	295
12	220	212	166	72	54	134	207	260	240	355	335	280
13	216	218	159	72	54	134	197	256	815	320	300	260
14	220	214	151	72	54	136	182	264	1470	290	295	236
15	212	210	149	72	66	140	174	272	2100	260	285	224
16	248	204	152	72	86	131	176	350	2430	248	315	208
17	285	198	154	68	123	129	183	248	2540	244	315	200
18	327	190	154	70	188	132	169	224	2000	248	280	188
19	319	193	145	72	225	127	167	222	1470	410	276	179
20	315	195	118	72	242	125	168	212	1160	594	264	166
21	290	190	120	72	272	128	164	199	965	517	244	158
22	276	194	115	73	247	128	182	192	829	545	232	150
23	285	199	118	76	201	127	182	330	752	664	224	141
24	285	190	109	80	173	126	174	1220	1260	804	236	136
25	295	150	103	85	169	128	166	1420	1560	972	244	147
26	285	166	99	92	163	128	168	1020	1700	874	365	147
27	276	203	99	92	172	131	167	790	1580	769	447	133
28	268	193	99	90	169	137	157	636	1270	692	692	120
29	290	210	99	85	---	155	155	545	1170	629	965	123
30	273	214	104	81	---	165	146	461	1840	594	965	126
31	256	---	108	84	---	181	---	393	---	531	867	---
TOTAL	8391	6377	4320	2599	3397	4351	5612	12183	30228	20331	15725	8469
MEAN	271	213	139	83.8	121	140	187	393	1008	656	507	282
MAX	327	276	222	111	272	181	247	1420	2540	1790	1290	741
MIN	212	150	89	68	54	125	146	135	236	244	224	120
CFSM	.12	.09	.06	.04	.05	.06	.05	.17	.45	.29	.23	.13
IN.	.14	.11	.07	.04	.06	.07	.09	.20	.50	.34	.26	.14
AC-FT	16640	12650	8570	5160	6740	8630	11130	24160	59960	40330	31190	16800

CAL YR 1980 TOTAL 247788 MEAN 677 MAX 4120 MIN 89 CFSM .30 IN 4.09 AC-FT 491500
WTR YR 1981 TOTAL 121983 MEAN 334 MAX 2540 MIN 54 CFSM .15 IN 2.01 AC-FT 242000

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42°43'26", long 94°11'30", in NW1/4 SE1/4 sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft (15 m) upstream from old mill dam, in city park at east edge of Dakota City, 500 ft (152 m) upstream from bridge on county highway P56, 0.6 mi (1.0 km) downstream from bridge on State Highway 3, 3.4 mi (5.5 km) upstream from confluence with Des Moines River, and at mile 333.8 (537.1 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi^2 (3,388 km^2).

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,038.71 ft (316.599 m) NGVD. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi (12.9 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 493 ft^3/s (13.96 m^3/s), 5.12 in/yr (130 mm/yr), 357,200 acre-ft/yr (440 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,800 ft^3/s (532 m^3/s) June 21, 1954, gage height, 16.95 ft (5.166 m), from floodmark, site and datum then in use; minimum daily, 4.8 ft^3/s (0.14 m^3/s) Jan. 11-14, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 24.02 ft (7.321 m), discharge, 17,400 ft^3/s (493 m^3/s) at present site. Flood of September 1938 reached a stage of 17.4 ft (5.30 m), discharge, about 22,000 ft^3/s (623 m^3/s) site and datum in use during the period 1940-54.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft^3/s (42.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 21	0015	1,600	45.3	10.76	3.280	July 30	0515	2,350	66.6	11.85	3.612
June 24	1800	*9,270	263	*18.68	5.694	Sept. 3	1045	1,660	47.0	10.86	3.310

Minimum daily discharge, 47 ft^3/s (1.33 m^3/s) Feb. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	471	305	158	80	66	126	144	171	660	4570	1990	1400
2	438	295	84	81	62	118	153	161	569	4010	1930	1580
3	405	290	152	79	62	109	166	157	503	3520	1800	1660
4	385	279	161	72	63	104	186	178	450	3140	1580	1660
5	366	268	195	74	64	98	189	192	406	2810	1460	1500
6	347	264	197	76	64	96	195	271	366	2540	1400	1240
7	332	261	170	73	63	96	205	422	328	2310	1300	1030
8	313	252	153	68	62	96	213	473	304	2090	1170	831
9	299	249	141	66	58	95	215	459	288	1860	1040	672
10	280	240	140	64	50	94	213	417	286	1630	909	574
11	261	227	139	64	47	92	203	377	271	1430	791	505
12	248	219	138	64	47	92	195	337	260	1220	693	452
13	236	216	129	64	48	92	193	315	744	1030	614	401
14	233	213	129	63	50	89	183	298	1030	857	554	350
15	230	209	127	61	66	89	168	290	1340	744	501	309
16	236	206	127	58	100	89	162	284	1490	743	505	284
17	257	200	129	58	128	87	162	274	1450	791	616	251
18	272	193	131	60	170	85	162	258	1460	852	685	204
19	284	194	108	60	140	82	164	241	1530	965	678	186
20	298	193	105	60	206	81	160	226	1580	1040	577	176
21	299	188	100	60	280	82	151	210	1590	1140	471	172
22	292	184	90	60	259	84	160	199	1460	1240	393	170
23	294	185	85	61	232	83	168	229	1220	1400	339	162
24	297	179	83	62	173	83	162	525	6790	1490	305	156
25	306	161	76	65	160	92	162	842	7910	1580	288	161
26	326	176	76	71	144	98	163	998	6750	1710	277	161
27	345	188	76	77	136	84	163	1090	6640	1790	382	159
28	349	170	78	73	134	86	160	1130	6300	1990	555	156
29	344	186	79	70	---	105	161	1130	5680	2250	805	152
30	336	160	80	67	---	125	180	994	5080	2340	1010	147
31	323	---	81	66	---	131	---	803	---	2210	1200	---
TOTAL	9702	6550	3717	2077	3140	2963	5261	13951	64735	57312	26818	16861
MEAN	313	218	120	67.0	112	95.6	175	450	2158	1849	865	562
MAX	471	305	197	81	280	131	215	1130	7910	4570	1990	1660
MIN	230	160	76	58	47	81	144	157	260	743	277	147
CFSM	.24	.17	.09	.05	.09	.07	.13	.34	1.65	1.41	.66	.43
IN.	.28	.19	.11	.06	.09	.08	.15	.40	1.84	1.63	.76	.48
AC-FT	19240	12990	7370	4120	6230	5880	10440	27670	128400	113700	53190	33440

CAL YR 1980 TOTAL 179466 MEAN 490 MAX 2880 MIN 54 CFSM .38 IN 5.10 AC-FT 356000
WTR YR 1981 TOTAL 213087 MEAN 584 MAX 7910 MIN 47 CFSM .45 IN 6.06 AC-FT 422700

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	241	210	118	81	162	694	1,190	757	975	697	275	293	475
RUNOFF (INCHES)	0.21	0.18	0.10	0.07	0.13	0.61	1.02	0.67	0.83	0.61	0.24	0.25	4.93
STD. DEVIATION	0.30	0.33	0.13	0.09	0.14	0.47	1.23	0.50	0.69	0.70	0.29	0.41	3.06
PERCENT OF ANNUAL	4.1	3.5	2.0	1.4	2.6	12	20	13	16	12	4.7	4.9	----
PRECIP. (INCHES)	1.7	1.1	0.9	0.7	0.9	1.9	2.7	4.0	4.9	3.7	3.3	2.8	28.7

05480000 LIZARD CREEK NEAR CLARE, IA

LOCATION.--Lat 42°32'35", long 94°20'45", in NE1/4 NE1/4 sec.11, T.89 N., R.30 W., Webster County, Hydrologic Unit 07100004, on right bank 20 ft (6 m) downstream from bridge on county highway, 2.3 mi (3.7 km) downstream from Drainage ditch 3, 3.0 mi (4.8 km) south of Clare, and 8.2 mi (13.2 km) upstream from South Lizard Creek.

DRAINAGE AREA.--257 mi² (666 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1954, published as North Lizard Creek near Clare.

REVISED RECORDS.--WSP 1508: 1940, 1942, 1944-46 (M), 1947-48.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,079.30 ft (328.971 m) NGVD. Prior to May 6, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 45.5 ft³/s (1.289 m³/s), 5.09 in/yr (129 mm/yr) 69,770 acre-ft/yr (86.0 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s); 4.3 in/yr (109 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft³/s (283 m³/s) June 23, 1947, gage height, 16.0 ft (4.88 m), from floodmark, from rating curve extended above 5,300 ft³/s (150 m³/s); no flow on a few days in 1943, 1956, and 1968 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,820 ft³/s (51.5 m³/s) May 23, gage-height, 7.50 ft (2.286 m) at 2200 hours; no other peak above base of 800 ft³/s (22.7 m³/s); minimum daily, 4.3 ft³/s (0.12 m³/s) Jan. 16-18, Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	35	17	8.6	5.5	23	21	20	55	85	33	141
2	41	34	13	8.2	5.3	18	21	17	53	84	350	114
3	37	33	11	7.8	5.2	14	21	16	49	74	300	95
4	35	32	7.0	7.4	5.2	17	24	44	46	70	250	80
5	36	31	9.2	7.4	5.2	16	28	52	45	60	205	69
6	33	31	11	6.8	5.2	18	26	52	41	53	175	61
7	31	31	12	6.2	5.2	14	22	49	40	46	145	59
8	29	32	11	5.6	5.0	14	23	44	37	40	125	58
9	29	31	11	4.6	4.8	16	21	41	50	35	110	51
10	27	29	9.6	4.4	4.6	16	20	38	64	31	95	44
11	26	27	9.2	4.4	4.3	14	19	33	64	29	84	38
12	24	26	9.0	4.4	4.4	14	19	33	59	27	74	34
13	24	27	9.8	4.4	4.4	15	18	36	106	24	65	30
14	23	28	10	4.4	4.5	14	18	36	342	21	58	27
15	24	27	9.6	4.5	8.8	13	17	34	305	20	54	26
16	29	26	10	4.3	20	14	15	32	271	20	44	25
17	40	25	11	4.3	42	13	16	31	229	17	38	23
18	62	23	9.7	4.3	72	14	18	30	181	17	35	23
19	57	25	8.8	4.4	70	12	16	29	141	22	32	22
20	51	27	7.2	4.5	47	11	15	27	118	28	29	22
21	45	25	6.2	4.6	43	13	15	25	103	24	28	19
22	41	25	6.5	4.8	52	16	17	23	92	47	26	20
23	41	22	7.0	4.9	42	15	19	456	79	126	25	19
24	43	20	6.5	5.2	44	14	18	590	214	100	29	19
25	42	13	6.8	5.5	46	14	15	246	156	79	30	26
26	41	13	7.0	5.6	43	15	14	165	112	60	130	28
27	40	16	7.2	5.8	37	15	42	123	86	51	166	25
28	40	14	7.6	5.7	28	14	134	103	71	47	227	22
29	38	17	8.1	5.7	---	17	40	90	66	48	291	20
30	37	18	8.8	5.6	---	23	25	71	71	43	229	23
31	36	---	9.3	5.6	---	23	---	61	---	37	175	---
TOTAL	1147	763	287.1	169.9	663.6	479	737	2647	3346	1465	3657	1263
MEAN	37.0	25.4	9.26	5.48	23.7	15.5	24.6	85.4	112	47.3	118	42.1
MAX	62	35	17	8.6	72	23	134	590	342	126	350	141
MIN	23	13	6.2	4.3	4.3	11	14	16	37	17	25	19
CFSM	.14	.10	.04	.02	.09	.06	.10	.33	.44	.18	.46	.16
IN.	.17	.11	.04	.02	.10	.07	.11	.38	.48	.21	.53	.18
AC-FT	2280	1510	569	337	1320	950	1460	5250	6640	2910	7250	2510

CAL YR 1980 TOTAL 29305.2 MEAN 80.1 MAX 1090 MIN 6.2 CFSM .31 IN 4.24 AC-FT 58130
WTR YR 1981 TOTAL 16624.6 MEAN 45.5 MAX 590 MIN 4.3 CFSM .18 IN 2.41 AC-FT 32970

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft#/s)	36	31	19	14	50	174	169	157	239	98	41	51	90
RUNOFF (INCHES)	0.16	0.14	0.08	0.06	0.20	0.78	0.73	0.70	1.04	0.44	0.18	0.22	4.76
STD. DEVIATION	0.27	0.28	0.13	0.10	0.29	0.65	0.78	0.62	1.13	0.48	0.27	0.57	2.96
PERCENT OF ANNUAL	3.1	2.7	1.6	1.2	3.9	15	14	14	20	8.5	3.5	4.3	----
PRECIP. (INCHES)	1.9	1.1	0.9	0.6	0.9	1.8	2.8	4.0	5.1	3.7	3.3	2.8	28.9

05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", long 94°12'04", in NW1/4 SW1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft (122 m) upstream from Soldier Creek, 1,800 ft (549 m) downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft (610 m) downstream from Lizard Creek, and at mile 314.6 (506.2 km).

DRAINAGE AREA.--4,190 mi^2 (10,852 km^2).

PERIOD OF RECORD.--April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (M).

GAGE.--Water-stage recorder. Datum of gage is 969.38 ft (295.467 m) NGVD. See WSP 1728 for history of changes prior to Dec. 8, 1949.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam 0.8 mi (1.3 km) upstream from gage. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters and City of Fort Dodge gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--49 years (1913-27, 1946-81), 1,379 ft^3/s (39.05 m^3/s), 4.47 in/yr (114 mm/yr), 999,100 acre-ft/yr (1,232 hm^3/yr); median of yearly mean discharges, 1,170 ft^3/s (33.1 m^3/s), 3.8 in/yr (97 mm/yr), 848,000 acre-ft/yr (1,050 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,600 ft^3/s (1,010 m^3/s) Apr. 8, 1965, gage height, 17.79 ft (5.422 m); maximum gage height, 19.62 ft (5.980 m), from floodmark, June 23, 1947, present site and datum; minimum daily discharge, 14 ft^3/s (0.40 m^3/s) Nov. 3, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft^3/s (170 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 24	2320	*13,200	374	*9.32	2.841	Aug. 3	1930	6,380	181	6.56	1.999

Minimum daily discharge, 115 ft^3/s (3.26 m^3/s) Feb. 11,12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	906	658	402	198	140	364	371	406	1170	7280	2880	2330
2	843	620	180	196	136	353	335	384	1040	6200	3150	2390
3	778	609	260	192	130	338	441	376	935	5330	4760	2420
4	748	596	300	190	130	332	531	489	850	4640	3740	2310
5	721	564	360	210	132	317	518	551	779	4130	3060	2050
6	690	560	385	170	130	313	528	683	710	3630	2740	1730
7	665	560	370	196	132	318	523	852	651	3370	2430	1510
8	639	542	350	168	128	300	519	911	612	3060	2110	1230
9	618	535	330	154	122	306	502	880	635	2730	1840	1030
10	590	522	305	156	120	308	487	815	666	2410	1580	907
11	552	490	270	160	115	301	471	746	650	2120	1350	804
12	528	472	290	142	115	299	489	695	609	1840	1150	736
13	511	475	285	140	116	294	479	668	1100	1590	1020	673
14	510	460	275	140	118	281	453	643	2640	1360	946	609
15	510	457	280	134	168	272	434	641	3580	1180	865	552
16	540	457	285	124	238	268	440	631	4220	1120	836	522
17	562	454	280	126	300	270	442	612	4280	1140	918	491
18	633	441	265	130	527	263	427	590	3850	1200	972	448
19	670	423	240	134	602	255	423	548	3240	1430	994	410
20	680	419	220	134	656	245	422	516	2940	1790	929	391
21	680	413	220	134	642	246	394	474	2700	1820	794	379
22	648	396	230	136	636	251	419	461	2450	1920	575	364
23	639	403	218	138	575	253	433	718	2120	2400	558	344
24	660	400	200	144	439	253	415	2680	8250	2580	551	344
25	651	364	198	154	431	251	408	3110	11800	2970	542	404
26	651	321	200	168	423	259	391	2580	9920	3120	715	385
27	660	381	210	168	397	256	408	2260	9470	3000	939	369
28	670	376	200	160	381	253	558	2060	8730	3080	1330	344
29	659	394	210	150	---	285	471	1920	7840	3250	2170	342
30	680	410	206	148	---	327	427	1690	7590	3350	2270	336
31	650	---	202	138	---	347	---	1390	---	3190	2290	---
TOTAL	20142	14172	8226	4832	8179	8978	13559	31980	106027	88230	51004	27154
MEAN	650	472	265	156	292	290	452	1032	3534	2846	1645	905
MAX	906	658	402	210	656	364	558	3110	11800	7280	4760	2420
MIN	510	321	180	124	115	245	335	376	609	1120	542	336
CFSM	.16	.11	.06	.04	.07	.07	.11	.25	.84	.68	.39	.22
IN.	.18	.13	.07	.04	.07	.08	.12	.28	.94	.78	.45	.24
AC-FT	39950	28110	16320	9580	16220	17810	26890	63430	210300	175000	101200	53860

CAL YR 1980 TOTAL 486572 MEAN 1329 MAX 9510 MIN 180 CFSM .32 IN 4.32 AC-FT 965100
WTR YR 1981 TOTAL 382483 MEAN 1048 MAX 11800 MIN 115 CFSM .25 IN 3.40 AC-FT 758700

05481000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW1/4 SE1/4 sec.18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100005, on right bank 100 ft (30 m) upstream from bridge on State Highway 17, 2.5 mi (4.0 km) south of Webster City, and 3.2 mi (5.1 km) downstream from Brewers Creek.

DRAINAGE AREA.--844 mi^2 (2,186 km^2).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (M), WSP 1708: 1956.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 989.57 ft (301.621 m) NGVD. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 375 ft^3/s (10.62 m^3/s), 6.03 in/yr (153 mm/yr), 271,700 acre-ft/yr (335 hm^3/yr); median of yearly mean discharges, 320 ft^3/s (9.06 m^3/s), 5.1 in/yr (130 mm/yr), 232,000 acre-ft/yr (286 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft^3/s (575 m^3/s) June 22, 1954, gage height, 18.55 ft (5.654 m); no flow Feb. 7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1896, 19.1 ft (5.82 m) about June 10, 1918, from floodmarks, from information by local resident, discharge, 21,500 ft^3/s (609 m^3/s). Flood of June 18, 1932, reached a stage of 16.0 ft (4.88 m), discharge, 15,000 ft^3/s (425 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft^3/s (292 m^3/s) June 26, gage height, 13.71 ft (4.179 m) at 2215 hours, no other peak above base of 2,200 ft^3/s (62.3 m^3/s); minimum daily, 18 ft^3/s (0.51 m^3/s) Feb. 8-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	332	193	80	32	20	103	107	195	379	2190	595	312
2	302	182	49	32	19	84	107	179	353	1790	758	245
3	276	176	52	31	19	67	117	169	326	1500	848	205
4	253	172	64	28	18	69	431	237	293	1250	739	179
5	235	165	71	27	19	62	622	404	267	1050	611	157
6	220	159	70	27	19	61	431	520	242	876	505	138
7	202	155	68	27	19	58	346	533	222	733	475	144
8	193	157	64	28	18	56	310	497	212	615	402	141
9	184	152	61	27	18	55	282	454	218	525	330	133
10	176	144	58	27	18	55	258	399	217	450	277	123
11	164	133	53	27	18	54	239	347	197	393	236	114
12	153	123	43	27	18	53	250	311	193	343	203	102
13	148	127	43	28	18	53	377	299	191	295	182	92
14	143	132	42	29	20	52	330	282	442	256	189	84
15	143	130	42	30	24	52	267	269	920	230	165	76
16	163	122	43	30	40	52	243	257	1050	215	155	72
17	168	116	43	30	86	51	239	242	944	401	144	67
18	174	111	41	31	152	53	221	230	818	637	133	64
19	193	122	35	33	190	51	205	214	708	524	122	63
20	186	137	32	33	223	51	194	200	575	464	113	59
21	176	111	32	33	195	51	178	192	452	399	103	57
22	164	111	32	34	175	54	191	186	404	402	96	53
23	171	106	32	34	158	56	221	210	350	466	92	50
24	185	104	31	34	144	58	239	356	3690	596	88	50
25	214	85	29	34	132	57	247	693	6030	990	87	118
26	255	86	29	34	128	59	248	823	9380	1180	139	126
27	257	89	30	33	124	63	242	719	9390	1330	102	104
28	245	82	31	29	110	67	235	577	6410	1320	138	90
29	229	94	31	26	---	82	222	501	4140	1130	245	83
30	212	90	32	23	---	98	212	474	2850	900	220	78
31	199	---	32	21	---	105	---	432	---	727	285	---
TOTAL	6315	3866	1395	919	2142	1942	7811	11400	51863	24177	8777	3379
MEAN	204	129	45.0	29.6	76.5	62.6	260	368	1729	780	283	113
MAX	332	193	80	34	223	105	622	823	9390	2190	848	312
MIN	143	82	29	21	18	51	107	169	191	215	87	50
CFSM	.24	.15	.05	.04	.09	.07	.31	.44	2.05	.92	.34	.13
IN.	.28	.17	.06	.04	.09	.09	.34	.50	2.29	1.07	.39	.15
AC-FT	12530	7670	2770	1820	4250	3850	15490	22610	102900	47960	17410	6700

CAL YR 1980 TOTAL 115551 MEAN 316 MAX 4280 MIN 29 CFSM .37 IN 5.09 AC-FT 229200
WTR YR 1981 TOTAL 123986 MEAN 340 MAX 9390 MIN 18 CFSM .40 IN 5.46 AC-FT 245900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	161	115	71	62	174	661	754	566	875	447	161	199	354
RUNOFF (INCHES)	0.22	0.15	0.10	0.08	0.22	0.90	1.00	0.77	1.16	0.61	0.22	0.26	5.70
STD. DEVIATION	0.38	0.21	0.11	0.11	0.27	0.72	1.25	0.64	1.12	0.70	0.29	0.65	3.67
PERCENT OF ANNUAL	3.9	2.6	1.8	1.4	3.9	16	18	14	20	11	3.9	4.6	----
PRECIP. (INCHES)	2.0	1.1	0.9	0.8	0.9	1.9	2.8	4.1	4.9	4.0	3.4	2.7	29.7

05481300 DES MOINES RIVER NEAR STRATFORD, IA

LOCATION.--Lat 42°15'04", long 93°59'52", in NW1/4 NE1/4 sec.21, T.86 N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft (2 m) downstream from bridge on State Highway 175, 0.1 mi (0.2 km) downstream from Skillet Creek, 4.0 mi (6.4 km) southwest of Stratford, 7.3 mi (11.7 km) downstream from Boone River and at mile 276.7 (445.3 km).

DRAINAGE AREA.--5,452 mi² (14,120 km²).

PERIOD OF RECORD.--April 1920 to current year in reports of Geological Survey. Published as "near Boone" 1920-67. Monthly discharge only for some periods, published in WSP 1308. December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1926-27, 1934. WSP 1708: 1955.

GAGE.--Water-stage recorder. Datum of gage is 894.00 ft (272.491 m) NGVD. Prior to May 1, 1920, nonrecording gage 16.6 mi (26.7 km) downstream at datum 23.49 ft (7.16 m) lower. Oct. 9, 1924, to Jan. 10, 1933, nonrecording gage 17.6 mi (28.3 km) downstream at datum 28.53 ft (8.70 m) lower. Jan. 11, 1933, to Sept. 30, 1934, nonrecording gage 17.9 mi (28.8 km) downstream at datum 22.25 ft (6.78 m) lower. Oct. 1, 1934 to Feb. 6, 1935, nonrecording gage and Feb. 7, 1935 to Sept. 30, 1967, water-stage recorder 17.9 mi (28.8 km) downstream at datum 21.94 ft (6.69 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam at Fort Dodge. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage-height telemeters at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--61 years, 1,780 ft³/s (50.41 m³/s), 4.43 in/yr (113 mm/yr), 1,290,000 acre-ft/yr (1,590 hm³/yr); median of yearly mean discharges, 1,580 ft³/s (44.7 m³/s), 3.9 in/yr (99.1 mm/yr), 1,145,000 acre-ft/yr (1,410 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,400 ft³/s (1,630 m³/s) June 22, 1954, gage height, 25.35 ft (7.727 m), from graph based on hourly gage readings, site and datum then in use; no flow for a short time on Jan. 9, 28, 1938, caused by manipulation of gates in control dam, site then in use; minimum unregulated daily discharge, 13 ft³/s (0.37 m³/s) Jan. 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft (7.74 m), from high-water mark, site and datum then in use, discharge, 43,600 ft³/s (1,230 m³/s). Flood of June 22, 1954, reached a stage of 29.7 ft (9.05 m), from floodmark, present site and datum, discharge, 54,200 ft³/s (1,530 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum dishcarge, 19,000 ft³/s (538 m³/s) June 27, gage height, 18.32 ft (5.584 m) at 2000 hours, no other peak above base of 7,000 ft³/s (198 m³/s); minimum daily, 150 ft³/s (4.25 m³/s) Feb. 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	895	537	265	190	496	429	641	1500	9940	3880	2680
2	1260	885	330	260	180	466	455	604	1680	8620	3440	2670
3	1160	848	380	250	166	450	442	586	1540	7470	4670	2670
4	1080	822	450	225	160	410	735	646	1400	6960	5270	2630
5	1020	798	490	210	170	390	1190	844	1270	5750	4150	2440
6	977	772	520	200	160	376	1090	1070	1170	5060	3530	2160
7	932	765	470	190	160	372	969	1270	1060	4500	3200	1900
8	888	754	460	180	160	365	919	1430	978	4060	2850	1600
9	852	732	390	170	154	350	872	1450	927	3610	2490	1400
10	818	713	380	160	154	349	823	1370	1000	3190	2210	1220
11	774	687	320	158	182	380	788	1250	977	2810	1940	1080
12	730	649	320	154	150	339	851	1160	938	2470	1690	971
13	697	630	300	156	150	330	851	1100	885	2170	1490	893
14	678	640	350	162	158	329	900	1050	1760	1900	1410	813
15	664	634	350	162	196	316	797	994	4100	1660	1290	738
16	693	819	330	162	250	320	726	969	4960	1480	1170	686
17	786	597	325	166	280	326	704	949	5270	1430	1120	649
18	770	582	290	170	490	323	685	922	5090	1720	1190	613
19	850	558	280	175	710	318	653	867	4420	1840	1210	565
20	894	585	280	180	850	314	629	814	3860	1940	1190	519
21	895	560	300	190	780	306	603	761	3470	2170	1090	488
22	875	563	320	194	710	310	594	710	3150	2120	961	472
23	861	536	280	198	640	311	676	752	2820	2420	860	458
24	922	531	270	206	620	313	672	1530	5510	2740	798	447
25	896	513	260	210	600	309	674	3390	14000	3320	753	514
26	921	468	280	212	560	300	666	3780	17200	4130	825	582
27	968	445	280	218	542	313	655	3330	18800	4230	1050	538
28	980	476	280	220	523	322	661	2940	17600	4350	1350	509
29	978	492	260	206	---	330	602	2690	14600	4270	2060	477
30	985	515	260	200	---	357	703	2390	11200	4250	2320	460
31	949	---	270	200	---	404	---	2200	---	4070	2620	---
TOTAL	28091	19205	10612	6013	10023	10864	22214	44429	153635	116250	64077	33922
MEAN	906	640	342	194	358	350	740	1433	5121	3750	2067	1131
MAX	1350	895	537	265	850	496	1190	3780	18800	9940	5270	2680
MIN	664	445	260	154	150	300	429	586	885	1430	753	447
CFSM	.17	.12	.06	.04	.07	.06	.14	.26	.94	.69	.38	.21
IN.	.19	.13	.07	.04	.07	.07	.15	.30	1.05	.79	.44	.23
AC-FT	55720	38090	21050	11930	19880	21550	44060	88120	304700	230600	127100	67280

CAL YR 1980 TOTAL 652412 MEAN 1783 MAX 14000 MIN 260 CFSM .33 IN 4.45 AC-FT 1294000
WTR YR 1981 TOTAL 519335 MEAN 1423 MAX 18800 MIN 150 CFSM .26 IN 3.54 AC-FT 1030000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	938	777	458	363	681	2,860	4,910	3,310	4,180	2,730	1,150	1,140	1,960
RUNOFF (INCHES)	0.20	0.16	0.10	0.08	0.13	0.60	1.00	0.70	0.86	0.58	0.24	0.23	4.88
STD. DEVIATION	0.25	0.22	0.09	0.08	0.14	0.44	1.10	0.51	0.66	0.61	0.22	0.32	2.97
PERCENT OF ANNUAL	4.1	3.3	2.0	1.6	2.7	12	20	14	18	12	4.9	4.7	----
PRECIP. (INCHES)	1.9	1.0	1.0	0.9	0.9	1.9	2.7	3.8	5.0	3.3	3.1	2.8	28.3

05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE 1/4, SW 1/4 sec.30, T.80 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi (5.1 km) northwest of Saylorville, 4.2 mi (6.8 m) upstream from Beaver Creek, and at mile 213.7 (343.8 km), revised.

DRAINAGE AREA.--5,823 mi² (15,082 km²).

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft (6.71 m) diameter concrete conduit through dam. Ungated chute spillway 430 ft (131 m) in length at right end of dam at elevation 884 ft (269 m), contents, 570,000 acre-ft (703 hm³). Conservation pool at elevation 833 ft (254 m), contents, 74,000 acre-ft (91 hm³), surface area, 5,400 acres (2,185 hm²). Flood pool elevation at 890 ft (271 m), contents, 676,000 acre-ft (834 hm³), surface area, 16,700 acres (6,758 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 561,000 acre-ft (692 hm³) Apr. 6,7, 1979; maximum elevation, 883.61 ft (269.325 m) Apr. 5, 1979; minimum daily contents, 66,900 acre-ft (82.5 hm³) Oct. 13,19-21, 1979; minimum elevation, 832.61 ft (253.780 m) Jan. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 131,000 acre-ft (162 hm³) June 30; maximum elevation, 841.10 ft (256.367 m) June 30; minimum daily contents, 78,400 acre-ft (96.7 hm³) Feb. 14; minimum elevation, 832.88 ft (253.862 m) June 23.

Capacity table (elevation, in feet, and contents, in acre-feet)

805	360	833	74,000	884	570,000
810	2,300	840	116,000	890	676,000
815	7,700	850	190,000	900	938,000
820	19,000	860	278,000	910	1,320,000
830	58,600	880	511,000	915	1,530,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81800	82900	82300	80000	78600	80600	82400	81300	81900	127000	83500	81300
2	81600	82800	82400	80600	78600	80400	82400	81000	81900	122000	83200	81700
3	81800	82600	82700	79700	78600	80200	82500	81200	81700	121000	82400	82400
4	82000	82500	83100	79700	78600	80200	82700	81500	81600	121000	83400	83500
5	82200	82400	83500	79600	78600	80100	82600	81600	81600	116000	84200	84400
6	82300	82200	83800	79500	78600	80000	83200	81600	81500	111000	83400	85000
7	82200	82200	83900	79300	78600	79800	83300	81800	81500	107000	82800	85500
8	82100	82000	83600	79200	78600	79700	82600	82200	81700	105000	82800	85900
9	82000	82100	83200	79200	78600	79600	82100	82600	81600	102000	82500	86500
10	81900	82000	82800	79100	78800	79600	82300	82600	81600	98700	81900	87000
11	81900	82000	82900	79100	78800	79500	82300	82600	81600	95300	81600	87700
12	82100	82000	83300	79100	78500	79600	82400	82600	81700	91900	81600	88300
13	82500	82200	83400	79100	78500	79600	82600	82600	81500	88900	81800	88800
14	82800	82100	83400	79100	78400	79500	82500	82300	81800	86900	81500	89000
15	82900	81900	83000	79000	78500	79400	82400	82100	83400	85200	80700	89600
16	83200	82100	82300	79000	78500	79300	82300	82100	85300	84000	80100	89900
17	83400	82200	81400	78900	78700	79200	81900	82300	85600	83300	80100	89700
18	83400	82300	80500	78800	78800	79200	81600	82500	85100	82500	80300	89600
19	83300	82300	79800	78800	79200	79200	81400	82500	84200	82300	80400	89600
20	83200	82400	79400	78600	80300	79300	81000	82400	84100	82200	80600	89600
21	83100	82200	79300	78600	82000	79700	81100	82300	82900	82100	80500	89400
22	82900	82300	79500	78600	82500	79900	82000	82300	81900	82500	80600	89200
23	83000	82400	79600	78600	80800	80100	81900	82600	81600	82700	80400	89300
24	82700	82300	79700	78600	80600	80300	81800	82700	82400	83100	80400	89600
25	82500	82200	79700	78600	81000	80600	81700	82100	85800	83800	80600	90000
26	82800	82200	79600	78600	81300	80800	81500	84100	92400	84200	80800	90100
27	83100	82200	79500	78600	81400	81200	81500	84400	102000	84700	80800	90200
28	82900	82200	79600	78600	81000	81500	81400	83600	115000	84500	81100	90200
29	82800	82200	79500	78600	---	81900	81400	82800	126000	84200	81300	90200
30	82900	82200	79700	78600	---	82300	81500	82400	131000	83900	81500	90200
31	83000	---	79700	78600	---	82500	---	82100	---	83500	81300	---
MAX	83400	82900	83900	80600	82500	82500	83300	84400	131000	127000	84200	90200
MIN	81600	61900	79300	78600	78400	79200	81000	81000	81500	82100	80100	81300

WTR YR 1981 MAX 131000 MIN 78400

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION (revised).--Lat 41°40'50", long 93°40'05", near center of sec.5, T.79 N., R.24 W., Polk County, Hydro logic Unit 07100004, on left bank 5 ft (2 m) upstream of Fisher bridge on county highway R6F, 2.0 mi (3.2 km) west of Saylorville, 2.1 mi (3.4 km) downstream from Rock Creek, 2.3 mi (3.7 km) downstream from Saylorville Dam, 2.3 mi (3.7 km) upstream from Beaver Creek, and at mile 211.4 (340.1 km).

DRAINAGE AREA.--5,841 mi^2 (15,128 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 787.42 ft (240.006 m) NGVD (levels by Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated by Saylorville Lake (Station 05481650) 2.3 mi (3.7 km) upstream since Apr. 12, 1977. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Twenty-four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--20 years, 2,447 ft^3/s (69.30 m^3/s), 5.69 in/yr (145 mm/yr), 1,773,000 acre-ft/yr (2,190 hm^3/yr); median of yearly mean discharges, 2,050 ft^3/s (58.1 m^3/s) 4.8 in/yr (122 mm/yr), 1,490,000 acre-ft/yr (1,840 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft^3/s (1,340 m^3/s) Apr. 10, 1965, gage height, 24.02 ft (7.321 m); minimum daily, 13 ft^3/s (0.37 m^3/s) Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft (7.47 m), June 24, 1954, from floodmarks, discharge, 60,000 ft^3/s (1,700 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,500 ft^3/s (354 m^3/s) June 30, gage height, 15.36 ft (4.682 m); minimum daily, 169 ft^3/s (4.79 m^3/s) Mar. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1580	947	541	245	209	724	331	760	2340	12400	4230	2820
2	1440	940	541	290	208	681	389	707	1980	11600	4270	2450
3	1200	892	431	324	205	601	447	646	1790	9180	4220	2340
4	1050	866	336	324	205	524	499	648	1620	8530	4490	2170
5	1040	859	318	324	205	524	693	697	1470	8220	4810	2160
6	1030	803	311	324	207	518	823	733	1260	7430	4650	2170
7	1030	760	432	324	209	518	1040	875	1090	6540	4050	2050
8	1040	758	591	300	203	518	1310	981	1080	5860	3400	1720
9	1040	750	648	235	199	479	1240	1280	1010	5720	3140	1420
10	939	750	615	227	211	433	909	1520	958	5080	2950	1170
11	825	727	432	227	274	434	908	1390	944	5020	2390	961
12	660	727	321	214	216	423	899	1300	936	4570	1910	859
13	555	723	409	204	216	423	899	1290	934	4030	1690	858
14	562	729	484	199	216	423	892	1290	941	3440	1910	869
15	676	670	598	196	218	418	886	1170	1550	2900	2140	659
16	579	593	766	196	220	361	886	960	3050	2370	1830	674
17	682	576	892	193	218	330	981	961	4680	2120	1390	633
18	730	572	892	193	212	330	947	960	5560	2080	1230	702
19	812	570	915	193	207	325	856	960	5440	2060	1220	694
20	919	570	1370	193	216	269	817	958	5070	2050	1210	633
21	945	579	949	193	468	205	703	872	4680	2050	1210	588
22	939	582	603	193	1250	177	658	807	4140	2030	1210	571
23	942	582	385	193	1690	175	787	888	3390	2010	1120	488
24	1170	582	410	193	1130	172	866	1030	3670	2330	949	439
25	1110	582	390	193	739	172	780	1610	5830	2800	872	497
26	879	568	338	190	736	170	777	2380	9030	3630	877	560
27	850	542	317	190	739	170	776	3320	10600	4190	972	563
28	1070	541	247	190	742	171	772	3720	11400	4470	1260	555
29	1030	538	199	211	---	172	761	3520	12000	4600	1510	561
30	960	535	203	212	---	169	761	2950	12400	4620	2070	564
31	953	---	227	209	---	209	---	2650	---	4480	2850	---
TOTAL	29127	20413	16111	7092	11768	11218	24293	43833	120843	148410	72030	33388
MEAN	940	680	520	229	420	362	810	1414	4028	4787	2324	1113
MAX	1580	947	1370	324	1690	724	1310	3720	12400	12400	4810	2820
MIN	555	535	199	190	199	169	331	646	934	2010	872	439
AC-FT	57770	40490	31960	14070	23340	22250	48190	86940	239700	294400	142900	66230

CAL YR 1980 TOTAL 696142 MEAN 1902 MAX 11700 MIN 199 AC-FT 1381000
WTR YR 1981 TOTAL 538526 MEAN 1475 MAX 12400 MIN 169 AC-FT 1068000

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD: Water years 1962 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1967 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.
WATER TEMPERATURES: October 1961 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 1,400 micromhos Feb. 18, 1977; minimum daily, 90 micromhos Feb. 19, 1971.
WATER TEMPERATURES: Maximum daily, 36.0°C June 29, 1971; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,400 mg/L May 14, 1970; minimum daily mean, 1 mg/L Jan. 8, 1965.
SEDIMENT LOADS: Maximum daily, 148,000 tons (134,000 tonnes) June 12, 1966; minimum daily, 1 ton (0.91 tonne) Jan. 8, 1965, Feb. 8-12, 23, 1967.

EXTREMES FOR CURRENT YEAR:
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Jan. 29; minimum daily, 430 micromhos July 1.
WATER TEMPERATURES: Maximum daily, 30.0° July 20; minimum daily, 0.0° Dec. 22, Feb. 7,8.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 150 mg/L June 28; minimum daily mean, 6 mg/L Dec. 17,20-22.
SEDIMENT LOADS: Maximum daily, 4,620 tons (4,190 tonnes) June 28; minimum daily, 3.2 tons (2.9 tonnes) Mar. 26.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	670	---	---	780	720	680	620	630	430	520	550
2	---	660	---	750	---	---	680	620	630	515	540	540
3	---	660	630	720	740	---	660	620	630	490	550	560
4	---	600	620	---	---	710	660	610	630	490	540	580
5	---	640	630	720	740	720	660	610	640	510	540	580
6	---	640	---	770	---	---	660	640	640	540	540	590
7	---	660	---	---	740	720	660	610	640	---	540	580
8	650	650	620	730	740	730	620	600	620	590	540	580
9	660	640	630	720	---	720	630	610	620	600	550	600
10	660	650	640	---	---	730	630	610	620	570	580	605
11	670	640	660	720	---	---	620	610	640	560	540	590
12	680	650	---	---	730	---	630	610	620	560	530	590
13	660	640	---	750	730	720	620	610	590	600	550	585
14	670	640	650	770	690	---	630	610	590	610	530	580
15	660	640	660	---	740	700	620	610	590	580	550	580
16	690	640	---	730	---	---	620	600	590	600	530	580
17	615	640	660	740	770	700	620	610	610	590	550	580
18	635	630	---	740	---	---	620	610	660	580	590	570
19	620	630	660	780	---	700	630	610	640	580	540	580
20	610	630	650	740	750	700	630	610	---	630	530	580
21	610	630	---	780	---	710	630	600	630	600	560	580
22	640	630	650	730	730	720	620	600	645	610	540	570
23	640	630	660	---	700	680	620	610	630	620	550	560
24	630	620	670	730	---	640	620	610	620	640	570	580
25	650	620	---	720	---	690	620	610	600	---	560	580
26	640	660	680	760	---	690	620	620	610	630	560	570
27	640	---	690	760	---	690	620	610	620	620	570	580
28	710	---	---	---	---	680	620	610	510	630	---	580
29	660	---	---	800	---	680	620	620	450	---	540	620
30	640	630	670	---	---	680	620	610	440	565	550	610
31	740	---	700	760	---	680	---	620	---	520	540	---

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.0	---	---	2.0	5.0	15.0	17.0	23.0	25.0	21.0	25.0
2	---	10.0	---	6.0	---	---	15.0	16.0	20.0	16.0	25.0	24.0
3	---	10.0	1.0	2.0	3.0	---	---	17.0	22.0	25.0	25.0	22.0
4	---	9.0	2.0	---	---	5.0	---	18.0	23.0	26.0	24.0	22.0
5	---	8.0	6.0	2.0	2.0	4.0	11.0	18.0	25.0	26.0	24.0	22.0
6	---	10.0	---	2.0	---	---	13.0	18.5	25.0	26.0	24.0	22.0
7	---	9.0	---	---	.0	5.0	14.0	19.0	22.0	26.0	25.0	23.0
8	26.0	9.0	1.0	2.0	.0	5.0	14.0	19.0	23.0	26.0	24.0	22.0
9	18.0	10.0	2.0	2.0	---	6.0	15.0	17.0	---	27.0	25.0	23.0
10	18.0	8.0	2.0	---	.5	6.0	15.0	18.0	---	26.0	25.0	25.0
11	14.0	7.0	1.0	2.0	---	---	15.0	18.0	20.0	27.0	25.0	25.0
12	13.0	9.0	---	---	4.0	---	15.0	15.0	22.0	29.0	26.0	25.0
13	15.0	7.0	---	3.0	5.0	8.0	15.0	16.0	23.0	29.0	27.0	25.0
14	10.0	6.0	2.0	3.0	6.0	---	15.0	17.0	24.0	29.0	27.0	23.0
15	16.0	6.0	2.0	---	---	8.0	15.0	17.0	23.0	28.0	26.0	20.5
16	16.0	7.0	---	9.0	---	---	15.0	14.0	24.0	28.0	25.0	21.0
17	13.0	5.0	2.5	4.0	8.0	8.0	15.0	14.0	23.0	28.0	25.0	20.0
18	12.0	3.0	---	5.0	---	---	15.0	15.0	24.5	28.0	25.0	20.0
19	12.0	7.0	3.0	8.0	---	5.0	13.0	17.0	24.0	28.0	25.0	25.0
20	15.0	7.0	2.0	5.0	8.0	10.0	14.0	17.0	23.0	30.0	25.0	25.0
21	12.0	8.0	---	6.0	---	10.0	14.0	17.0	22.0	28.0	25.0	20.0
22	16.0	8.0	.0	4.0	---	12.0	14.0	16.0	24.0	28.0	25.0	20.0
23	12.0	5.0	1.0	---	5.0	12.0	14.0	16.0	24.0	26.0	24.0	19.0
24	9.5	4.0	3.0	7.5	---	8.0	15.0	17.0	22.5	28.0	25.0	19.0
25	9.0	5.0	---	5.0	---	11.0	18.0	18.0	24.0	28.0	25.0	20.0
26	9.0	4.0	3.0	4.0	---	12.0	18.0	20.0	25.0	19.0	24.0	20.0
27	7.0	---	4.0	2.0	---	12.0	17.0	21.0	23.0	15.0	23.0	20.0
28	7.5	---	---	---	---	10.0	18.0	19.0	25.0	22.0	---	20.0
29	8.0	---	---	2.0	---	10.0	18.0	22.0	24.5	20.0	25.0	22.0
30	9.0	7.0	4.0	---	---	14.0	17.0	22.0	25.0	22.0	24.0	20.5
31	9.0	---	5.0	2.0	---	15.0	---	22.0	---	21.0	25.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	25	107	18	46	18	26	15	9.9	44	26	18	35
2	25	97	15	38	17	25	17	13	48	27	20	37
3	25	81	16	39	16	19	18	16	53	29	22	36
4	24	68	17	40	14	13	18	16	44	24	24	34
5	24	67	15	35	12	10	17	15	33	18	17	24
6	23	64	13	26	11	9.2	50	44	27	15	14	20
7	22	61	10	21	10	12	51	45	24	14	15	21
8	21	59	11	23	9	14	45	36	37	20	15	21
9	22	62	15	30	8	14	40	25	32	17	15	19
10	23	58	12	24	9	15	38	23	23	13	11	13
11	28	62	14	27	10	12	36	22	15	11	15	18
12	27	47	13	26	13	11	38	22	9	5.2	21	24
13	28	42	19	37	17	19	21	12	20	12	27	31
14	27	41	18	35	19	25	24	13	13	7.6	31	35
15	34	53	16	29	9	15	28	15	11	6.5	35	40
16	27	42	14	22	7	14	30	16	12	7.1	36	35
17	27	42	14	22	7	14	30	16	12	7.1	36	35
18	59	116	10	15	7	17	19	9.9	16	9.2	51	45
19	45	99	10	15	8	20	22	11	20	11	64	56
20	35	87	11	17	6	22	17	8.9	23	13	35	26
21	38	97	14	22	6	15	18	9.4	24	30	12	6.6
22	27	68	20	31	6	9.8	17	8.9	25	84	7	3.3
23	29	74	19	30	9	9.4	15	7.8	31	141	14	6.6
24	44	139	19	30	15	17	12	6.3	36	110	16	7.4
25	29	87	14	22	16	17	12	6.3	33	66	9	4.2
26	34	81	12	18	15	14	18	9.2	29	58	7	3.2
27	33	76	13	19	13	11	21	11	25	50	9	4.1
28	26	75	15	22	12	8.0	22	11	21	42	13	6.0
29	22	61	16	23	12	6.4	25	14	---	---	14	6.5
30	22	57	18	26	12	6.6	35	20	---	---	15	5.8
31	17	44	---	---	14	8.5	46	26	---	---	14	7.9
TOTAL	---	2247	---	806	---	449.0	---	518.6	---	873.3	---	666.6

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	15	13	10	21	23	145	113	3780	124	1420	45	343
2	19	20	10	19	16	86	103	3230	136	1570	37	245
3	36	43	19	33	17	82	72	1780	108	1230	32	202
4	35	47	21	37	28	122	53	1220	99	1200	28	164
5	38	71	19	36	20	79	52	1150	108	1400	26	152
6	36	80	14	28	15	51	55	1100	101	1270	21	123
7	25	70	16	38	20	59	48	848	99	1080	27	149
8	26	92	16	42	37	108	30	475	104	955	31	144
9	26	87	14	48	37	101	28	432	92	780	20	77
10	27	66	13	53	40	103	58	796	56	446	18	57
11	25	61	12	45	49	125	73	989	78	503	23	60
12	22	53	12	42	53	134	50	617	115	593	20	46
13	20	49	16	56	91	229	38	413	75	342	25	58
14	20	48	18	63	86	219	40	372	76	392	33	77
15	18	43	18	57	86	360	47	368	108	624	48	85
16	16	38	20	52	84	692	49	314	103	509	47	86
17	13	34	21	54	115	1490	48	275	82	308	35	60
18	14	36	18	47	117	1760	71	399	67	223	36	68
19	18	42	16	41	84	1230	60	334	99	326	30	56
20	16	35	15	39	58	794	50	277	94	307	28	48
21	15	28	16	38	55	695	53	293	49	160	30	48
22	18	32	18	39	61	682	46	252	62	203	47	72
23	24	51	16	38	91	833	39	212	80	242	49	65
24	24	56	13	36	129	2210	44	277	62	159	32	38
25	25	53	31	135	160	3870	55	416	45	106	33	44
26	23	48	29	186	120	3470	69	676	43	102	45	68
27	17	36	41	368	115	3290	62	701	38	100	31	47
28	13	27	35	352	150	4620	58	700	43	146	30	45
29	13	27	31	295	133	4310	57	708	51	208	22	33
30	10	21	31	247	125	4180	55	686	56	313	20	30
31	---	---	22	157	---	---	97	1170	47	362	---	---
TOTAL	---	1407	---	2742	---	36129	---	25260	---	17579	---	2790

TOTAL LOAD FOR YEAR: 91462.5 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAY						
06...	1705	16.0	741	17	34	98
JUN						
17...	1120	23.0	4310	114	1330	95
JUL						
02...	1010	16.0	11500	109	3410	90
30...	1710	22.5	4520	48	586	89
SEP						
09...	1255	--	1480	23	92	94

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
MAR												
24...	1050	172	7	0	1	6	28	57	73	86	93	100
MAY												
06...	1705	741	6	1	2	7	35	69	80	89	96	100
JUN												
17...	1120	4310	8	0	1	5	27	62	79	88	95	100
JUL												
30...	1710	4520	5	1	2	10	38	68	82	91	98	100

05481950 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'08", in SW1/4 SW1/4 sec.35, T.80 N., R.25 W., Polk County, Hydrologic Unit 07100004, on right bank 6 ft (2 m) upstream from bridge on Northwest 70th Avenue, 0.5 mi (0.8 km) downstream from Little Beaver Creek, 2.5 mi (4.0 km) east of Grimes and 6 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--358 mi² (927 km²).

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WDR IA-77-1: 1974 (P).

GAGE.--Water-stage recorder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft (245.968 m) NGVD. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--21 years, 188 ft³/s (5.324 m³/s), 7.13 in/yr (181 mm/yr), 136,200 acre-ft/yr (168 hm³/yr); median of yearly mean discharges, 160 ft³/s (4.53 m³/s) 6.1 in/yr (155 mm/yr), 116,000 acre-ft/yr (143 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,340 ft³/s (208 m³/s) May 19, 1974, gage height, 14.69 ft (4.478 m); no flow for several days in 1970 and 1971 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,140 ft³/s (32.3 m³/s) Aug. 14, gage height, 7.71 ft (2.350 m), no peak above base of 1,500 ft³/s (42.5 m³/s); minimum daily, 0.01 ft³/s (0.001 m³/s) Feb. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.54	2.0	.68	2.0	7.2	2.8	.83	.59	59	11	36
2	.11	.41	1.5	.58	.22	6.7	2.3	.75	.35	52	13	29
3	.10	.41	1.1	.64	.42	5.4	2.5	.84	.21	54	13	23
4	.11	.47	.92	.55	1.3	7.1	6.0	1.8	.16	997	9.4	22
5	.12	.47	1.6	.42	2.2	6.7	7.4	.98	.12	707	7.8	18
6	.16	.54	2.1	.40	2.5	5.1	4.7	.61	.19	269	8.1	15
7	.17	.68	3.4	.58	2.4	4.7	4.3	.43	.39	152	7.1	17
8	.17	.68	3.6	.76	.40	4.7	5.0	.35	.64	109	14	18
9	.26	.60	3.1	.51	.08	5.2	4.1	.35	.63	82	11	20
10	.19	.60	2.4	.33	.01	4.4	3.7	.26	.46	93	6.5	25
11	.08	.60	2.0	1.1	.01	4.8	3.5	.23	.45	63	5.0	20
12	.08	.68	2.2	2.9	.06	4.7	3.0	.24	.49	45	4.0	17
13	.14	1.0	2.4	2.6	5.5	4.4	3.0	.29	.32	35	3.2	13
14	.18	1.2	2.0	2.2	17	3.8	3.6	.45	.27	28	208	10
15	.22	.95	2.0	2.1	30	4.0	3.1	3.4	14	22	327	7.7
16	.64	1.2	1.8	2.3	30	3.6	2.8	.72	1.8	19	70	6.0
17	.79	.95	2.1	1.8	30	3.7	3.1	.42	48	18	37	5.4
18	.37	.85	1.8	3.3	31	3.2	2.7	.43	48	15	24	5.1
19	.54	.87	1.3	4.1	41	2.9	2.3	.35	29	14	16	4.6
20	.43	1.1	.57	3.9	40	2.9	2.1	.23	19	11	12	4.0
21	.53	1.1	.36	4.0	23	3.0	1.9	.17	13	10	9.1	3.3
22	.49	.94	1.4	4.5	21	3.0	3.3	5.0	10	8.0	7.4	2.9
23	.67	.86	.33	4.2	18	2.6	5.5	3.6	8.3	6.6	6.0	2.6
24	1.1	.88	.24	3.9	13	2.3	4.2	2.3	352	6.0	5.4	2.9
25	.56	1.1	.66	3.6	12	2.2	3.2	.99	270	5.6	4.9	5.3
26	.57	1.7	1.1	2.2	8.7	2.1	2.1	.52	169	5.3	9.9	5.4
27	.55	1.6	1.2	1.5	8.2	2.5	1.8	.60	80	6.0	14	4.1
28	.77	1.5	1.2	1.6	8.0	1.9	1.5	.75	52	13	30	4.1
29	.76	2.1	.72	1.5	---	2.5	1.4	2.8	41	19	41	4.1
30	.55	2.6	.67	2.0	---	2.9	1.0	2.5	69	16	50	3.4
31	.49	---	.72	2.5	---	3.2	---	1.1	---	13	49	---
TOTAL	12.05	29.18	48.49	63.23	348.00	123.4	97.9	34.29	1229.37	2952.5	1033.8	353.9
MEAN	.39	.97	1.56	2.04	12.4	3.98	3.26	1.11	41.0	95.2	33.3	11.8
MAX	1.1	2.6	3.6	4.5	41	7.2	7.4	5.0	352	997	327	36
MIN	.08	.41	.24	.33	.01	1.9	1.0	.17	.12	5.3	3.2	2.6
CFSM	.001	.003	.004	.006	.04	.01	.009	.003	.12	.27	.09	.03
IN.	.00	.00	.01	.01	.04	.01	.01	.00	.13	.31	.11	.04
AC-FT	24	58	96	125	690	245	194	68	2440	5860	2050	702

CAL YR 1980 TOTAL 31608.13 MEAN 86.4 MAX 1600 MIN .08 CFSM .24 IN 3.28 AC-FT 62690
WTR YR 1981 TOTAL 6326.11 MEAN 17.3 MAX 997 MIN .01 CFSM .05 IN .66 AC-FT 12550

05482170 BIG CEDAR CREEK NEAR VARINA, IA

LOCATION.--Lat 42°41'16", long 94°47'52", in NE1/4 NE1/4 sec.24, T.91 N., R.34 W., Pocahontas County, Hydrologic Unit 07100006, on left bank 2 ft (1 m) downstream from bridge on county highway N33, 2.0 mi (3.2 km) downstream from Drainage ditch 21, 3.5 mi (5.6 km) upstream from Drainage ditch 74, and 5.5 mi (8.9 km) northeast of Varina.

DRAINAGE AREA.--80.0 mi² (207 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,225.12 ft (373.417 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 35.5 ft³/s (1.005 m³/s), 6.03 in/yr (153 mm/yr), 25,720 acre-ft/yr (31.7 hm³/yr); median of yearly mean discharges, 30 ft³/s (0.85 m³/s), 5.1 in/yr (130 mm/yr), 21,700 acre-ft/yr (26.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft³/s (58.9 m³/s) Aug. 31, 1962, gage height, 13.68 ft (4.170 m); maximum gage height, 16.29 ft (4.965 m) Mar. 24, 1979, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 372 ft³/s (10.5 m³/s) June 13, gage height, 6.87 ft (2.094 m), no peak above base of 400 ft³/s (11.3 m³/s); minimum daily, 2.3 ft³/s (0.065 m³/s) Feb. 4,5,11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	26	5.6	3.8	2.6	4.1	14	7.2	13	46	11	23
2	32	27	4.8	3.2	2.5	3.9	12	6.9	14	37	243	19
3	31	28	5.2	3.2	2.4	4.1	13	8.3	13	34	138	16
4	30	24	5.8	3.4	2.3	4.3	21	23	12	36	65	13
5	27	24	5.6	3.5	2.3	4.2	19	33	12	33	41	11
6	26	26	5.0	3.8	2.4	3.9	17	28	11	31	29	10
7	26	26	4.0	3.4	2.4	4.0	18	25	11	27	21	9.0
8	25	24	6.2	3.4	2.5	4.1	16	23	11	25	16	7.9
9	23	22	5.2	3.3	2.4	4.2	14	21	13	21	12	6.7
10	23	20	6.8	2.9	2.4	4.1	14	19	17	18	9.5	5.9
11	22	20	7.0	3.1	2.3	4.0	14	17	16	17	8.5	5.2
12	20	22	5.0	3.4	2.4	4.2	13	17	27	15	7.5	4.7
13	21	22	9.4	3.4	2.5	4.4	13	19	320	13	6.6	4.6
14	21	19	8.3	3.4	3.3	4.8	12	17	213	12	7.5	4.8
15	19	19	7.4	3.5	8.1	5.2	10	16	141	11	6.3	3.8
16	61	19	6.8	3.5	13	5.0	12	16	100	10	5.1	5.5
17	91	19	4.8	3.6	18	5.8	13	15	78	9.8	4.7	4.0
18	61	17	4.4	3.7	16	6.2	10	15	62	9.4	4.2	4.0
19	50	16	4.0	3.8	13	6.8	10	14	49	11	3.4	4.0
20	45	14	5.0	3.9	11	7.5	9.9	13	41	11	3.4	4.0
21	41	11	5.7	3.9	9.3	8.6	9.7	12	36	9.8	2.9	3.6
22	39	10	5.6	3.9	7.4	7.9	11	13	34	22	2.5	3.4
23	38	9.2	4.3	4.0	5.8	7.5	11	19	27	19	2.8	3.4
24	36	7.4	4.3	4.0	5.3	8.1	9.2	21	39	16	4.1	3.8
25	36	5.8	4.5	4.0	5.0	8.8	8.9	19	34	13	6.5	6.5
26	34	8.2	5.1	3.8	4.7	9.3	8.9	17	28	12	31	5.2
27	33	7.8	5.5	3.6	4.5	9.6	8.8	17	25	11	32	4.0
28	30	7.0	5.9	3.3	4.3	10	9.0	16	24	12	110	3.8
29	30	7.4	6.0	2.9	---	14	8.5	15	51	10	59	4.0
30	30	6.2	5.8	2.7	---	17	7.8	14	65	9.7	39	4.0
31	28	---	4.9	2.6	---	15	---	13	---	8.7	30	---
TOTAL	1065	514.0	173.9	107.9	160.1	210.6	367.7	529.4	1537	570.4	962.5	207.8
MEAN	34.4	17.1	5.61	3.48	5.72	6.79	12.3	17.1	51.2	18.4	31.0	6.93
MAX	91	28	9.4	4.0	18	17	21	33	320	46	243	23
MIN	19	5.8	4.0	2.6	2.3	3.9	7.8	6.9	11	8.7	2.5	3.4
CFSM	.43	.21	.07	.04	.07	.09	.15	.21	.64	.23	.39	.09
IN.	.50	.24	.08	.05	.07	.10	.17	.25	.71	.27	.45	.10
AC-FT	2110	1020	345	214	318	418	729	1050	3050	1130	1910	412

CAL YR 1980 TOTAL 10454.6 MEAN 28.6 MAX 252 MIN 1.6 CFSM .36 IN 4.86 AC-FT 20740
WTR YR 1981 TOTAL 6406.3 MEAN 17.6 MAX 320 MIN 2.3 CFSM .22 IN 2.98 AC-FT 12710

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°20'28", long 94°59'05", in NE1/4 NW1/4 sec.24, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) upstream from Indian Creek, 0.9 mi (1.4 km) downstream from Drainage ditch 73, 5.6 mi (9.0 km) south of Sac City, and at mile 365.9 (588.7 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--713 mi² (1,846 km²).

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,144.60 ft (348.874 m) NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 287 ft³/s (8.128 m³/s), 5.47 in/yr (139 mm/yr), 207,900 acre-ft/yr (256 hm³/yr); median of yearly mean discharges, 270 ft³/s (7.65 m³/s), 5.1 in/yr (130 mm/yr), 196,000 acre-ft/yr (242 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 13,100 ft³/s (371 m³/s) Mar. 23, 1979, gage height, 18.02 ft (5.492 m); maximum gage height, 18.12 ft (5.523 m) Sept. 1, 1962; no flow Jan. 30 to Feb. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft (4.758 m), from floodmark, discharge, 7,000 ft³/s (198 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,290 ft³/s (36.5 m³/s) June 14, gage height, 7.96 ft (2.426 m), no peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 18 ft³/s (0.51 m³/s) Feb. 3-6, 10-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	119	62	36	19	58	82	54	132	239	66	120
2	112	116	61	35	19	51	78	52	129	183	416	102
3	108	112	49	33	18	48	75	53	127	204	258	86
4	106	108	54	30	18	51	90	105	120	892	284	78
5	103	105	70	27	18	51	95	142	110	1030	288	65
6	94	107	81	26	18	50	88	173	103	641	208	60
7	88	110	90	25	19	46	82	165	100	433	151	57
8	84	112	84	24	19	47	83	170	97	328	116	50
9	83	107	80	23	19	50	76	160	94	262	98	44
10	78	103	69	22	18	49	72	150	119	213	91	40
11	78	95	66	21	18	46	72	135	154	177	80	35
12	71	92	63	20	18	46	70	125	152	153	71	32
13	70	97	68	20	18	47	69	115	214	132	68	31
14	70	101	67	20	19	47	70	112	1210	115	64	30
15	71	97	63	20	34	46	65	108	1250	99	56	29
16	92	93	67	20	47	47	61	106	995	91	53	29
17	216	91	68	20	100	49	64	100	729	82	47	31
18	318	84	62	20	200	47	66	97	536	75	42	31
19	232	92	54	20	208	45	61	94	395	75	37	29
20	188	96	44	21	176	46	60	90	315	71	34	27
21	165	91	37	21	138	53	61	84	253	65	32	26
22	155	91	38	21	111	53	64	83	214	99	34	26
23	155	85	36	22	81	50	68	259	176	131	30	25
24	154	82	35	22	70	49	64	655	213	93	32	25
25	149	67	33	22	72	52	57	386	235	98	28	30
26	146	60	31	22	67	50	54	275	176	109	57	34
27	143	84	31	22	64	50	55	210	148	92	137	39
28	136	73	32	21	63	49	57	184	136	86	175	30
29	128	68	33	20	---	59	57	173	149	85	324	27
30	127	71	34	20	---	75	55	155	217	77	214	25
31	122	---	35	20	---	82	---	141	---	69	154	---
TOTAL	3967	2809	1697	716	1689	1589	2071	4931	8998	6499	3745	1293
MEAN	128	93.6	54.7	23.1	60.3	51.3	69.0	159	300	210	121	43.1
MAX	318	119	90	36	208	82	95	655	1250	1030	416	120
MIN	70	60	31	20	18	45	54	52	94	65	28	25
CFSM	.18	.13	.08	.03	.09	.07	.10	.22	.42	.30	.17	.06
IN.	.21	.15	.09	.04	.09	.08	.11	.26	.47	.34	.20	.07
AC-FT	7870	5570	3370	1420	3350	3150	4110	9780	17850	12890	7430	2560

CAL YR 1980 TOTAL 69981 MEAN 191 MAX 1580 MIN 18 CFSM .27 IN 3.65 AC-FT 138800
WTR YR 1981 TOTAL 40004 MEAN 110 MAX 1250 MIN 18 CFSM .15 IN 2.09 AC-FT 79350

05482315 BLACKHAWK LAKE AT LAKE VIEW, IA

LOCATION.--Lat 42°18'15", long 95°02'30", in NW1/4 SE1/4 sec.33, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on south shore across from swimming beach at Lake View and 2 mi (3.2 km) upstream from lake outlet.

DRAINAGE AREA.--23.3 mi² (60.3 km²).

PERIOD OF RECORD.--April 1970 to September 1975, April 1978 to current year.

GAGE.--Water-stage reacorder. Datum of gage is 1,218.50 ft (371.399 m) NGVD and 2.00 ft (0.610 m) below crest of spillway of dam at outlet. Prior to June 25, 1970, nonrecording gage at lake outlet.

REMARKS.--Lake is formed by concrete dam with ungated overflow spillway at elevation 1,220.50 ft (372.008 m) NGVD. Lake is used for conservation and recreation. Area of lake is approximately 957 acres (390 hm²).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 4.08 ft (1.244 m) Mar. 20, 1979; minimum, 0.02 ft (0.006 m) Sept. 26, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 1.63 ft (0.497 m) Oct. 1, affected by seiche; minimum, 0.02 ft (0.006 m) Sept. 26, affected by seiche.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.55	1.44	1.31	1.27	1.23	1.19	1.07	.89	.81	.55	.53	.46
2	1.52	1.45	1.33	1.27	1.22	1.18	1.08	.89	.80	.53	.57	.47
3	1.54	1.42	1.32	1.27	1.21	1.20	1.10	.90	.79	.62	.57	.45
4	1.53	1.42	1.31	1.26	1.21	1.20	1.11	1.04	.79	.70	.55	.43
5	1.54	1.42	1.30	1.26	1.21	1.18	1.12	1.05	.78	.70	.58	.43
6	1.51	1.40	1.31	1.25	1.20	1.19	1.14	1.06	.75	.72	.57	.41
7	1.50	1.41	1.32	1.25	1.20	1.18	1.11	1.05	.72	.74	.54	.40
8	1.50	1.40	1.32	1.25	1.20	1.18	1.09	1.03	.70	.72	.53	.38
9	1.49	1.38	1.32	1.24	1.19	1.17	1.09	1.01	.68	.71	.52	.37
10	1.42	1.40	1.32	1.24	1.20	1.16	1.08	1.00	.65	.70	.49	.36
11	1.40	1.41	1.32	1.24	1.20	1.15	1.08	.99	.65	.69	.48	.35
12	1.42	1.38	1.32	1.23	1.20	1.14	1.07	1.00	.64	.67	.46	.34
13	1.42	1.37	1.32	1.23	1.20	1.13	1.06	1.00	.62	.66	.48	.32
14	1.40	1.39	1.31	1.23	1.20	1.14	1.04	.98	.60	.65	.48	.30
15	1.42	1.39	1.30	1.24	1.20	1.10	1.05	.98	.58	.64	.47	.27
16	1.49	1.39	1.30	1.23	1.21	1.10	1.03	.99	.56	.61	.45	.25
17	1.46	1.38	1.30	1.23	1.22	1.12	1.02	1.01	.57	.60	.43	.24
18	1.46	1.38	1.30	1.23	1.23	1.06	1.04	1.00	.53	.58	.42	.22
19	1.46	1.37	1.30	1.22	1.23	1.05	1.02	.95	.53	.58	.40	.22
20	1.45	1.34	1.30	1.22	1.24	1.07	1.00	.95	.49	.55	.39	.22
21	1.47	1.35	1.30	1.22	1.24	1.08	1.00	.95	.48	.54	.38	.21
22	1.47	1.36	1.29	1.22	1.21	1.05	1.01	.94	.45	.53	.36	.22
23	1.47	1.34	1.29	1.21	1.19	1.05	.97	.94	.47	.51	.37	.22
24	1.45	1.34	1.29	1.21	1.23	1.08	1.00	.90	.52	.50	.42	.20
25	1.45	1.34	1.28	1.21	1.25	1.10	1.00	.90	.48	.50	.42	.22
26	1.46	1.34	1.28	1.20	1.26	1.09	.98	.90	.47	.51	.40	.18
27	1.47	1.33	1.28	1.20	1.21	1.14	.97	.90	.47	.52	.42	.18
28	1.45	1.30	1.28	1.20	1.18	1.10	.94	.89	.43	.53	.47	.19
29	1.45	1.30	1.28	1.20	---	1.12	.91	.88	.55	.54	.48	.17
30	1.44	1.30	1.28	1.20	---	1.11	.90	.85	.55	.54	.49	.16
31	1.44	---	1.28	1.21	---	1.08	---	.85	---	.53	.48	---
MEAN	1.47	1.37	1.30	1.23	1.21	1.13	1.04	.96	.60	.60	.47	.29
MAX	1.55	1.45	1.33	1.27	1.26	1.20	1.14	1.06	.81	.74	.58	.47
MIN	1.40	1.30	1.28	1.20	1.18	1.05	.90	.85	.43	.50	.36	.16

WTR YR 1981 MEAN .97 MAX 1.55 MIN .16

05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA

LOCATION.--Lat 41°59'17", long 94°22'36", in SW1/4 NW1/4 sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100006, on right bank 5 ft (2 m) downstream from bridge on State Highway 4, 0.1 mi (0.2 km) downstream from Drainage ditch 33 and 40, 1.9 mi (3.1 km) south of Jefferson, 4.2 mi (6.8 km) upstream from Hardin Creek, and at mile 292.5 (470.6 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,619 mi² (4,193 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as Raccoon River near Jefferson.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft (294.769 m) NGVD. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage. June 26, 1946 to Sept. 30, 1955, water-stage recorder. Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 658 ft³/s (18.63 m³/s), 5.52 in/yr (140 mm/yr), 476,700 acre-ft/yr (588 hm³/yr); median of yearly mean discharges, 570 ft³/s (16.1 m³/s), 4.8 in/yr (122 mm/yr), 413,000 acre-ft/yr (509 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 29,100 ft³/s (824 m³/s) June 23, 1947, gage height, 22.3 ft (6.80 m); minimum daily, 0.6 ft³/s (0.017 m³/s) Oct. 5, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,620 ft³/s (45.9 m³/s) June 29, gage height, 7.35 ft (2.240 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 36 ft³/s (1.02 m³/s) Jan. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	169	100	54	41	138	107	93	245	558	299	623
2	180	168	80	53	39	135	114	92	226	450	727	458
3	169	166	87	52	38	129	119	92	215	478	576	369
4	164	162	90	51	38	124	170	109	206	592	791	311
5	158	157	92	49	38	118	156	115	198	783	1060	267
6	153	153	90	47	38	112	150	172	188	1270	761	239
7	147	153	90	43	38	110	146	230	174	1080	560	229
8	141	149	93	40	37	107	139	246	163	792	420	219
9	131	148	97	38	38	105	131	233	157	619	382	192
10	123	148	94	37	38	104	128	218	152	504	314	173
11	120	147	91	36	38	101	125	202	148	428	269	154
12	120	145	90	36	38	100	120	192	149	374	235	141
13	120	145	82	37	39	98	116	184	185	330	211	131
14	117	140	76	38	51	96	114	179	193	290	200	122
15	114	139	72	38	71	93	111	174	712	261	189	112
16	124	142	70	38	97	91	113	173	1140	239	176	107
17	129	142	66	39	132	89	115	165	1050	216	162	102
18	132	136	64	39	200	88	112	161	841	200	155	100
19	202	135	56	40	300	87	111	160	654	190	148	97
20	280	135	63	40	379	87	111	156	524	181	138	96
21	254	134	70	41	323	85	109	149	436	181	132	94
22	232	134	70	41	269	83	113	141	368	241	126	91
23	225	134	61	42	227	82	114	159	324	201	121	89
24	211	129	54	43	194	82	113	193	389	206	118	88
25	199	117	50	44	171	85	111	375	374	333	117	100
26	196	109	50	44	157	92	110	718	315	945	223	92
27	191	110	50	44	148	96	104	530	318	534	191	94
28	187	113	52	43	145	94	98	408	283	537	231	96
29	183	117	53	43	---	94	95	335	831	463	343	100
30	178	118	54	42	---	95	93	292	1020	393	844	98
31	172	---	55	42	---	99	---	266	---	346	788	---
TOTAL	5249	4194	2262	1314	3362	3099	3568	6912	12178	14215	11007	5184
MEAN	169	140	73.0	42.4	120	100	119	223	406	459	355	173
MAX	280	169	100	54	379	138	170	718	1140	1270	1060	623
MIN	114	109	50	36	37	82	93	92	148	181	117	88
CFSM	.10	.09	.05	.03	.07	.06	.07	.14	.25	.28	.22	.11
IN.	.12	.10	.05	.03	.08	.07	.08	.16	.28	.33	.25	.12
AC-FT	10410	8320	4490	2610	6670	6150	7080	13710	24160	28200	21830	10280

CAL YR 1980 TOTAL 137479 MEAN 376 MAX 2380 MIN 50 CFSM .23 IN 3.16 AC-FT 272700
WTR YR 1981 TOTAL 72544 MEAN 199 MAX 1270 MIN 36 CFSM .12 IN 1.67 AC-FT 143900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft#/s)	271	207	144	134	281	1,070	1,160	995	1,660	739	412	320	616
RUNOFF (INCHES)	0.19	0.14	0.10	0.10	0.18	0.76	0.80	0.71	1.14	0.53	0.29	0.22	5.17
STD. DEVIATION	0.31	0.15	0.09	0.11	0.22	0.63	0.79	0.58	0.98	0.52	0.45	0.42	3.22
PERCENT OF ANNUAL	3.7	2.7	1.9	1.9	3.5	15	16	14	22	10	5.6	4.3	----
PRECIP. (INCHES)	1.9	1.1	0.8	0.9	0.9	2.0	2.8	3.8	5.0	3.4	3.6	2.7	29.0

05483000 EAST FORK HARDIN CREEK NEAR CHURDAN, IA

LOCATION.--Lat 42°06'27", long 94°22'12", in SE1/4 SW1/4 sec.5, T.84 N., R.30 W., Greene County, Hydrologic Unit 07100006, on left bank 35 ft (11 m) upstream from bridge on county highway E26, 1.6 mi (2.6 km) upstream from small left-bank tributary, 4.4 mi (7.1 km) upstream from mouth, and 6.5 mi (10.5 km) southeast of Churdan.

DRAINAGE AREA.--24.0 mi^2 (62.2 km^2).

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1954-55, 1957 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,050.90 ft (320.314 m) NGVD.

REMARKS.--Records good except those below 2.0 ft^3/s (0.057 m^3/s), which are fair, and those for winter period which are poor. Small diversion for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 9.31 ft^3/s (0.264 m^3/s), 5.27 in/yr (134 mm/yr), 6,740 acre-ft/yr (8.31 hm/yr); median of yearly mean discharges, 7.0 ft^3/s (0.198 m^3/s), 4.0 in/yr (102 mm/yr), 5,100 acre-ft/yr (6.29 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 413 ft^3/s (11.7 m^3/s) May 5, 1960, gage height, 8.92 ft (2.719 m), from rating curve extended above 330 ft^3/s (9.35 m^3/s); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 150 ft^3/s (4.25 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
July 4	unknown	*207	5.86	*6.86	2.091	Aug. 26	0345	169	4.79	6.19	1.887

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.05	.00	.00	.56	34	14	13
2	.00	.00	.00	.00	.00	.03	.00	.00	.59	21	14	10
3	.00	.00	.00	.00	.00	.01	.01	.00	.59	68	13	7.8
4	.00	.00	.00	.00	.00	.05	3.7	.17	.42	181	10	6.3
5	.00	.00	.00	.00	.00	.50	.85	1.2	.32	104	14	5.3
6	.00	.00	.02	.00	.00	.35	.38	1.1	.27	61	14	4.3
7	.00	.00	.01	.00	.00	.25	.25	.87	.22	42	9.1	9.4
8	.00	.00	.00	.00	.00	.18	.23	.70	.21	31	6.7	10
9	.00	.00	.00	.00	.00	.13	.12	.61	.26	19	4.9	8.4
10	.00	.00	.00	.00	.00	.09	.06	.47	.21	14	3.7	6.6
11	.00	.00	.00	.00	.00	.04	.05	.38	.14	11	2.8	4.7
12	.00	.00	.00	.00	.00	.01	.04	.42	.08	8.5	2.1	3.8
13	.00	.00	.00	.00	.00	.00	.03	.47	.08	6.4	1.7	3.4
14	.00	.00	.00	.00	.01	.00	.02	.36	.11	5.0	1.7	2.9
15	.00	.00	.00	.00	.01	.00	.00	.30	57	4.1	1.3	2.4
16	.00	.00	.00	.00	.02	.00	.00	.25	39	2.8	.95	2.2
17	.00	.00	.00	.00	.02	.00	.03	.31	18	2.5	.80	2.1
18	.00	.00	.00	.00	.03	.00	.00	.39	10	2.2	.68	1.8
19	.00	.00	.00	.00	.05	.00	.00	.28	6.4	1.7	.55	2.2
20	.00	.00	.00	.00	.10	.00	.00	.19	4.8	1.3	.46	2.0
21	.00	.00	.00	.00	.20	.00	.00	.14	3.4	1.7	.39	1.6
22	.00	.00	.00	.00	.40	.00	.04	.12	2.5	2.7	.35	1.3
23	.00	.00	.00	.00	1.0	.00	.05	3.4	1.8	2.0	.33	1.1
24	.00	.00	.00	.01	.60	.00	.00	2.3	40	1.1	.35	1.3
25	.00	.00	.00	.02	.35	.00	.00	2.0	19	34	3.4	2.0
26	.00	.00	.00	.01	.20	.00	.00	1.4	9.1	56	129	2.0
27	.00	.00	.00	.00	.12	.00	.00	1.2	6.7	34	63	1.4
28	.00	.00	.02	.00	.07	.00	.00	1.0	5.0	48	45	1.2
29	.00	.00	.00	.00	---	.04	.00	.96	104	40	32	1.7
30	.00	.00	.00	.00	---	.08	.00	.80	72	28	23	2.2
31	.00	---	.00	.00	---	.00	---	.65	---	18	18	---
TOTAL	.00	.00	.05	.04	3.18	1.81	5.86	22.44	402.76	886.0	431.26	124.4
MEAN	.000	.000	.002	.001	.11	.058	.20	.72	13.4	28.6	13.9	4.15
MAX	.00	.00	.02	.02	1.0	.50	3.7	3.4	104	181	129	13
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.08	1.1	.33	1.1
CFSM	.000	.000	.000	.000	.005	.002	.008	.03	.56	1.19	.58	.17
IN.	.00	.00	.00	.00	.00	.00	.01	.03	.62	1.37	.67	.19
AC-FT	.00	.00	.10	.08	6.3	3.6	12	45	799	1760	855	247

CAL YR 1980 TOTAL 1695.72 MEAN 4.63 MAX 138 MIN .00 CFSM .19 IN 2.63 AC-FT 3360
WTR YR 1981 TOTAL 1877.80 MEAN 5.14 MAX 181 MIN .00 CFSM .21 IN 2.91 AC-FT 3720

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA

LOCATION.--Lat 41°46'43", long 94°29'33", in SW1/4 SW1/4 sec.32, T.81 N., R.31 W., Guthrie County, Hydrologic Unit 07100007, on left bank 50 ft (15 m), downstream from bridge on State Highway 25, 0.2 mi (0.3 km) downstream from Battle Run Creek, 1.8 mi (2.9 km) upstream from Springbook Creek, 5.8 mi (9.3 km) southeast of Bayard, 10.4 mi (16.7 km) upstream from dam at Lake Panorama, and at mile 279.2 (449.2 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--375 mi² (971 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1979 to current year. Occasional low-flow measurements, water years 1976,77. Contracted opening measurement of July 3, 1973 flood.

GAGE.--Water-stage recorder. Datum of gage is 1,040.00 ft. (316.992 m) NGVD. Prior to June 23, 1979 nonrecording gage on downstream side of State Highway 25 bridge.

REMARKS.--Records good except those for winter period, which are poor. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,460 ft³/s (98.0 m³/s) Mar. 23, 1979, gage height, 17.68 ft (5.389 m); minimum daily, 5.5 ft³/s (0.16 m³/s), June 13,14,1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 3, 1973 reached a stage of 21.63 ft (6.593 m) from contracted opening measurement, discharge, 14,600 ft³/s (413 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 23	1700	1,580	44.7	13.73	4.185	July 4	1400	1,400	39.6	13.23	4.033
June 30	0515	*2,370	67.1	*15.74	4.798	Aug. 2	1400	2,200	62.3	15.34	4.676

Minimum daily discharge, 5.5 ft³/s (0.16 m³/s) June 13,14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	22	18	11	14	30	25	9.7	16	378	57	53
2	16	20	15	9.8	13	26	20	9.2	16	200	1130	46
3	16	20	11	9.8	14	24	18	9.2	15	169	677	39
4	17	19	13	10	14	27	65	63	14	1040	429	45
5	18	18	14	11	14	26	102	99	14	459	213	41
6	18	18	15	11	14	24	40	43	11	237	158	34
7	17	18	15	11	14	23	29	29	12	155	118	61
8	15	19	14	11	14	23	24	23	9.8	114	93	80
9	15	18	15	12	14	23	22	21	9.2	190	77	55
10	15	16	14	11	14	24	19	19	7.6	92	67	42
11	13	17	16	12	14	23	18	16	6.7	71	58	36
12	15	22	13	13	13	23	17	15	6.7	59	53	32
13	16	19	11	14	13	22	15	16	5.5	51	51	30
14	17	21	13	14	17	22	15	16	5.5	43	56	29
15	16	21	13	14	24	22	16	15	344	68	55	27
16	22	20	12	14	43	22	16	13	239	107	46	27
17	38	19	12	14	70	21	14	13	60	53	41	27
18	37	18	13	16	110	20	14	17	33	40	38	27
19	26	18	13	17	94	19	15	19	24	37	36	27
20	21	20	11	18	75	20	16	16	19	41	35	25
21	19	19	12	18	64	20	15	13	17	34	33	24
22	18	18	11	18	52	20	17	11	16	30	32	23
23	20	19	11	18	43	18	32	537	14	28	29	22
24	25	16	10	18	34	18	30	301	47	25	32	22
25	24	12	9.2	18	33	25	18	88	156	24	31	40
26	22	16	9.8	16	31	31	13	48	54	520	353	51
27	22	17	10	15	31	27	12	32	29	189	186	35
28	24	15	11	14	30	24	10	27	21	185	206	29
29	21	17	11	13	---	24	11	23	445	128	125	26
30	24	18	11	13	---	25	10	20	1510	83	79	24
31	20	---	11	13	---	27	---	17	---	68	60	---
TOTAL	623	550	388.0	427.6	930	723	688	1598.1	3177.0	4918	4654	1079
MEAN	20.1	18.3	12.5	13.8	33.2	23.3	22.9	51.6	106	159	150	36.0
MAX	38	22	18	18	110	31	102	537	1510	1040	1130	80
MIN	13	12	9.2	9.8	13	18	10	9.2	5.5	24	29	22
CFSM	.05	.05	.03	.04	.09	.06	.06	.14	.28	.42	.40	.10
IN.	.06	.05	.04	.04	.09	.07	.07	.16	.32	.49	.46	.11
AC-FT	1240	1090	770	848	1840	1430	1360	3170	6300	9750	9230	2140

CAL YR 1980 TOTAL 23250.0 MEAN 63.5 MAX 700 MIN 9.2 CFSM .17 IN 2.31 AC-FT 46120
WTR YR 1981 TOTAL 19755.7 MEAN 54.1 MAX 1510 MIN 5.5 CFSM .14 IN 1.96 AC-FT 39190

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1979 to current year.
WATER TEMPERATURES: April 1979 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1979 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 26, 1979; minimum daily, 280 micromhos June 30, 1981.
WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 5, 1979; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,440 mg/L June 27, 1979; minimum daily mean, 8 mg/L Feb. 3, 1981.
SEDIMENT LOADS: Maximum daily, 56,500 tons (51,300 tonnes) June 27, 1979; minimum daily, 0.30 tons (0.27 tonnes) Feb. 3, 1981.

EXTREMES FOR CURRENT YEAR:
SPECIFIC CONDUCTANCE: Maximum daily, 740 micromhos Sept. 28; minimum daily, 280 micromhos June 30.
WATER TEMPERATURES: Maximum daily, 27.0°C Aug. 5; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,580 mg/L Aug. 2; minimum daily mean, 8 mg/L Feb. 3.
SEDIMENT LOADS: Maximum daily, 34,500 tons (31,300 tonnes) Aug. 2; minimum daily, 0.30 tons (0.27 tonner) Feb. 3.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	---	---	---	---	600	---	520	540	480	---	---
2	620	540	520	560	560	---	---	---	---	600	340	620
3	490	570	520	---	---	570	---	---	540	650	400	---
4	---	570	---	---	550	---	550	545	---	420	540	---
5	---	---	---	600	---	---	540	465	---	---	---	720
6	---	---	---	---	550	440	530	540	---	710	---	---
7	505	570	---	580	---	---	---	640	---	---	---	600
8	---	---	---	---	---	---	650	---	560	---	---	605
9	---	---	---	---	490	540	---	---	---	680	600	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	640	540	---	---	---
12	---	620	---	540	520	---	580	---	---	---	---	660
13	490	---	---	---	---	510	---	570	---	640	---	---
14	490	---	---	540	---	---	560	---	---	---	620	---
15	---	620	560	---	---	---	---	---	480	590	---	640
16	---	---	---	540	500	560	---	---	420	---	---	---
17	---	---	---	---	440	---	---	---	380	---	580	---
18	---	---	---	---	500	---	---	550	590	---	---	---
19	---	550	---	500	410	---	---	---	---	---	---	---
20	560	---	---	---	400	540	530	580	---	620	---	---
21	---	---	---	480	---	---	---	560	---	---	---	640
22	570	---	580	---	---	---	530	---	530	580	---	---
23	---	---	---	480	520	520	---	---	---	---	---	600
24	540	520	---	---	---	---	---	420	560	600	580	---
25	---	---	690	---	560	550	---	460	455	---	---	600
26	---	560	620	500	---	---	---	570	400	---	---	---
27	---	---	---	---	---	600	520	---	---	420	420	---
28	580	---	---	520	---	---	---	600	---	500	350	740
29	600	---	580	510	---	---	520	580	560	---	---	---
30	600	---	---	---	---	570	---	---	280	---	---	670
31	---	---	560	---	---	---	---	---	---	---	640	---

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	---	.0	---	---	3.0	---	18.0	22.0	23.0	---	---
2	11.0	6.0	.0	1.0	.0	---	---	---	---	24.0	22.0	10.0
3	11.0	10.0	1.0	---	---	4.0	---	---	24.0	24.0	22.0	---
4	---	8.0	---	---	.0	---	11.0	16.0	---	22.0	23.0	---
5	---	---	1.0	3.0	---	---	10.0	14.0	---	---	---	14.0
6	---	---	---	---	.0	4.0	9.0	16.0	---	24.0	---	---
7	11.0	5.0	2.0	.0	---	---	---	16.0	---	---	---	20.0
8	---	---	---	---	---	---	10.0	---	25.0	---	---	20.0
9	---	---	---	---	.0	5.0	---	---	---	25.0	25.0	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	14.0	20.0	---	---	---
12	---	6.0	---	2.0	.0	---	10.0	---	---	---	---	21.0
13	6.0	6.0	---	---	---	5.0	---	14.0	---	27.0	---	---
14	8.0	---	---	3.0	---	---	10.0	---	---	---	25.0	---
15	---	8.0	2.0	---	---	---	---	---	23.0	26.0	---	20.0
16	---	---	---	1.0	5.0	6.0	---	---	20.0	---	---	---
17	---	---	---	---	5.0	---	---	---	18.0	---	23.0	---
18	---	---	---	---	6.0	---	---	14.0	21.0	---	---	---
19	---	---	---	3.0	5.0	---	---	---	---	---	---	---
20	10.0	---	---	---	5.0	7.0	10.0	18.0	---	26.0	---	---
21	---	---	---	5.0	---	---	---	19.0	---	---	---	21.0
22	11.0	---	.0	---	---	---	10.0	---	20.0	26.0	---	---
23	---	---	---	7.0	3.0	7.0	---	---	---	---	---	19.0
24	10.0	5.0	---	---	---	---	---	19.0	25.0	25.0	23.0	---
25	---	---	.0	---	4.0	10.0	---	18.0	24.0	---	---	19.0
26	---	4.0	.0	.0	---	---	---	19.0	24.0	---	---	---
27	---	---	---	---	---	10.0	17.0	---	---	25.0	21.0	---
28	4.0	---	---	1.0	---	---	---	20.0	---	22.0	22.0	12.0
29	6.0	---	1.0	.0	---	---	17.0	21.0	24.0	---	---	---
30	---	---	---	---	---	10.0	---	---	23.0	---	---	18.0
31	6.0	---	2.0	---	---	---	---	---	---	---	21.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	25	1.1	24	1.4	21	1.0	48	1.4	9	.34	26	2.1
2	32	1.4	29	1.6	22	.89	50	1.3	11	.39	21	1.8
3	24	1.0	40	2.2	23	.86	50	1.3	8	.30	16	1.0
4	27	1.2	41	2.1	22	.77	52	1.4	9	.34	18	1.3
5	33	1.6	35	1.7	22	.83	58	1.7	10	.38	16	1.1
6	38	1.8	30	1.5	20	.81	56	1.7	10	.38	18	1.2
7	47	2.2	26	1.3	20	.81	49	1.6	15	.57	18	1.1
8	44	1.8	31	1.5	20	.76	45	1.4	20	.76	18	1.1
9	42	1.7	34	1.7	20	.81	47	1.5	39	1.5	20	1.2
10	39	1.6	35	1.4	21	.79	45	1.3	38	1.4	24	1.6
11	35	1.2	37	1.7	28	1.1	44	1.4	34	1.3	28	1.7
12	30	1.2	41	2.4	34	1.2	44	1.5	25	.91	34	2.1
13	24	1.0	34	1.7	39	1.2	40	1.5	24	.84	32	1.9
14	30	1.4	25	1.4	42	1.5	35	1.5	20	.92	30	1.8
15	38	1.6	21	1.2	44	1.5	28	1.1	19	1.2	35	2.1
16	41	2.4	25	1.4	42	1.4	24	.81	22	2.6	36	2.1
17	48	4.9	25	1.3	40	1.3	35	1.3	146	28	35	2.0
18	45	4.5	28	1.4	44	1.5	42	1.6	250	74	35	1.9
19	42	2.9	47	2.3	49	1.7	44	2.0	236	60	34	1.7
20	40	2.3	30	1.6	54	1.6	40	1.9	130	26	32	1.7
21	40	2.1	15	.77	60	1.9	39	1.9	56	9.7	35	1.9
22	42	2.3	14	.68	66	2.0	36	1.7	40	5.6	41	2.2
23	45	2.4	15	.77	59	1.8	35	1.7	35	4.1	51	2.5
24	45	3.0	18	.78	44	1.2	29	1.4	35	3.2	74	3.6
25	47	3.0	16	.62	30	.75	16	.79	35	3.1	170	12
26	44	2.6	15	.65	25	.86	15	.60	35	3.0	164	14
27	40	2.4	16	.73	25	.86	11	.45	35	3.0	90	3.6
28	34	2.2	19	.77	27	.90	10	.38	33	2.7	45	2.9
29	25	1.4	20	.92	32	.98	11	.39	---	---	48	3.1
30	24	1.0	20	.97	38	1.1	10	.35	---	---	59	4.0
31	21	1.1	---	---	49	1.5	10	.35	---	---	100	7.3
TOTAL	---	62.6	---	40.46	---	35.49	---	39.26	---	230.53	---	89.3

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	70	4.7	124	3.2	180	7.8	1390	1420	600	92	142	20
2	79	4.3	103	2.6	184	7.9	790	427	7580	34500	70	8.7
3	92	4.8	102	2.6	185	7.8	728	422	1800	3290	54	5.7
4	840	147	3120	831	185	7.0	7350	22300	650	753	300	36
5	920	263	3700	989	183	6.9	4200	6440	390	224	650	72
6	340	37	1800	174	176	8.2	600	304	350	149	500	46
7	295	23	320	28	245	7.9	210	88	250	80	450	74
8	280	18	148	9.2	296	7.8	300	92	240	60	260	56
9	216	13	142	8.1	280	7.0	1600	821	225	47	222	33
10	185	9.5	134	6.5	262	6.3	810	201	179	32	206	23
11	157	7.6	124	5.4	231	4.2	700	134	158	24	190	18
12	140	6.4	109	4.4	232	4.3	600	96	144	21	169	15
13	130	6.3	94	4.1	240	3.6	580	80	130	18	135	11
14	126	5.1	83	3.6	275	4.1	520	60	113	17	106	8.3
15	117	5.1	76	3.2	7000	8800	1240	228	109	16	83	6.1
16	112	4.8	75	2.6	5700	3880	1750	505	110	14	79	5.8
17	110	4.2	72	2.5	3000	486	690	99	106	12	74	5.4
18	105	4.0	76	3.5	380	31	390	42	104	11	70	5.1
19	98	4.0	90	4.6	163	11	240	24	98	9.5	66	4.8
20	90	3.9	103	4.4	143	7.3	160	19	95	9.0	62	4.2
21	85	3.4	123	3.7	130	6.0	100	9.2	88	7.6	59	3.8
22	98	4.5	134	4.0	120	5.2	85	6.9	84	7.3	52	3.2
23	136	12	7060	22600	115	4.3	62	4.7	80	6.3	50	3.0
24	160	13	6940	6760	2000	284	48	3.2	74	6.4	74	4.4
25	180	7.3	1740	469	4190	1760	50	3.2	78	6.3	172	19
26	140	5.2	550	71	1000	146	2400	5080	1830	2880	180	21
27	131	4.2	400	35	600	47	1850	1190	1650	482	72	6.8
28	116	3.1	330	24	390	22	3280	1640	2200	1220	40	3.1
29	105	3.1	276	17	1220	4870	1500	518	1380	466	54	3.8
30	113	3.1	233	13	8180	24900	825	185	990	211	76	4.9
31	---	---	197	9.0	---	---	500	92	490	79	---	---
TOTAL	---	823.3	---	31795.8	---	42816.3	---	42614.2	---	44730.8	---	831.1

TOTAL LOAD FOR YEAR: 185814.64 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT											
07...	1115	12.0	16	72	3.3	--	--	--	--	--	56
NOV											
19...	1345	.5	18	33	1.6	--	--	--	--	--	81
MAR											
25...	1200	12.0	26	240	17	--	--	--	--	--	99
APR											
05...	0925	10.0	110	2760	820	73	84	94	98	--	100
MAY											
04...	2000	16.0	151	1750	713	67	70	78	92	--	99
JUN											
15...	1800	23.0	704	12500	23800	59	64	75	88	100	--
30...	0845	23.0	2070	5990	33500	68	74	79	83	--	97
JUL											
04...	0715	22.0	1030	7000	19500	59	62	67	77	--	99
28...	1800	20.0	215	2920	1700	65	69	81	92	100	--

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
NOV												
19...	1320	18	8	2	3	14	59	91	98	99	99	100
MAR												
25...	1200	26	7	2	4	17	65	94	98	99	100	--
MAY												
04...	2010	151	5	4	6	21	69	94	98	99	100	--
JUN												
15...	1800	704	8	6	12	32	79	85	99	100	--	--
JUL												
28...	1800	215	5	1	2	15	69	93	98	99	100	--
SEP												
08...	1230	80	7	2	4	19	65	92	97	98	99	100

05483470 LAKE PANORAMA AT PANORA, IOWA

LOCATION.--Lat 41°41'44", long 94°22'53", in SW1/4 NE1/4 sec.31, T.80 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, in gate control building of dam on Middle Raccoon River, 0.5 mi (0.8 km) upstream from State Highway 44, 1.0 mi (1.6 km) west of Panora, 4.4 mi (7.1 km) upstream from Bay Branch, and at mile 268.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--433 mi^2 (1,121 km^2).

PERIOD OF RECORD.--May 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft (304.800 m) NGVD.

REMARKS.--Lake is formed by earthfill dam with 100 ft (30.5 m) bascule gate and concrete chute spillway, and 300 ft (91.4 m) earthen emergency spillway. Low-flow outlet is 30 in (0.762 m) conduit and gate valve through dam. Dam was completed in August 1970 and began filling April 27, 1971. Total storage, 60,000 acre-ft (74.0 hm^3), surface area, 2,900 acres (1,170 hm^2), at top of dam, elevation 1,068 ft (325.5 m). Storage unknown at top of spillway, elevation 1,048 ft (319.4 m). Normal storage, 19,700 acre-ft (24.3 hm^3), surface area, 1,270 acres (514 hm^2) with bascule gate closed, elevation 1,045 ft (318.5 m). Dead storage unknown with bascule gate open, elevation 1,036 ft (315.8 m). Present lake classification is utility (industrial) but is also used for recreation. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 46.61 ft (14.207 m) June 30, 1981; minimum, 44.30 ft (13.503 m) Aug. 17, 1979.

EXTREMES FOR CURRENT PERIOD.--Maximum gage height, 46.61 ft (14.207 m) June 30; minimum, 44.72 ft (13.631 m) Oct. 15.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44.92	45.06	45.19	45.07	45.05	45.03	45.30	45.26	45.42	45.39	45.30	45.57
2	44.90	45.06	45.20	45.07	45.05	45.06	45.28	45.21	45.39	45.24	45.47	45.51
3	44.88	45.12	45.11	45.07	45.05	45.05	45.29	45.21	45.40	45.28	45.41	45.48
4	44.84	45.13	45.09	45.06	45.05	45.10	45.38	45.27	45.38	---	45.36	45.56
5	44.82	45.13	45.09	45.06	45.05	45.12	45.47	45.41	45.37	---	45.30	45.60
6	44.81	45.13	45.12	45.06	45.06	45.13	45.47	45.44	45.37	45.25	45.26	45.61
7	44.82	45.15	45.15	45.06	45.06	45.14	45.47	45.43	45.34	45.24	45.22	45.66
8	44.83	45.14	45.19	45.06	45.06	45.15	45.48	45.43	45.34	45.24	45.19	45.40
9	44.81	45.14	45.19	45.06	45.04	45.15	45.43	45.45	45.32	45.21	45.17	45.42
10	44.83	45.14	45.18	45.05	45.05	45.18	45.42	45.41	45.33	45.24	45.13	45.49
11	44.81	45.14	45.17	45.04	---	45.16	45.42	45.37	45.32	---	45.11	45.48
12	44.77	45.14	45.17	45.02	---	45.13	45.43	45.35	45.29	---	45.12	45.39
13	44.75	45.16	45.17	45.02	45.06	45.13	45.44	45.36	45.27	45.19	45.12	45.36
14	44.75	45.17	45.17	45.02	45.06	45.12	45.41	45.35	45.25	45.18	45.14	45.41
15	44.74	45.17	45.17	45.01	45.08	45.15	45.35	45.34	45.48	45.18	45.10	45.43
16	44.78	45.17	45.17	45.01	45.12	45.13	45.34	45.31	45.86	45.22	45.04	45.41
17	44.83	45.17	45.17	44.99	45.20	45.14	45.35	45.32	45.74	45.18	44.98	45.37
18	44.87	45.17	45.17	44.99	45.38	45.15	45.32	45.33	45.62	---	44.97	45.33
19	44.89	45.18	45.16	44.99	45.53	45.14	45.33	45.32	45.51	---	44.98	45.30
20	44.89	45.18	45.13	44.99	45.52	45.11	45.30	45.31	45.44	45.16	44.98	45.29
21	44.89	45.15	45.11	44.99	45.59	45.08	45.28	45.29	45.39	45.12	44.96	45.29
22	44.88	45.14	45.09	44.99	45.61	45.12	45.32	45.29	45.35	45.11	44.95	45.24
23	44.93	45.17	45.09	44.99	45.55	45.12	45.35	45.31	45.29	45.09	44.94	45.20
24	45.00	45.15	45.08	45.00	45.46	45.12	45.35	45.70	45.31	45.07	44.93	45.20
25	45.00	45.15	45.08	45.01	45.43	45.18	45.34	45.55	45.44	---	44.93	45.22
26	45.00	45.13	45.03	45.03	45.36	45.19	45.35	45.53	45.46	---	45.10	45.28
27	45.00	45.13	45.02	45.04	45.03	45.18	45.34	45.52	45.39	45.73	45.54	45.28
28	45.04	45.15	45.02	45.04	45.02	45.21	45.35	45.51	45.31	45.37	45.81	45.24
29	45.04	45.16	45.02	45.04	---	45.26	45.31	45.50	45.34	45.30	45.83	45.24
30	45.04	45.15	45.04	45.05	---	45.28	45.29	45.47	46.19	45.32	45.72	45.25
31	45.05	---	45.06	45.05	---	45.29	---	45.44	---	45.31	45.59	---
MEAN	44.88	45.14	45.12	45.03	---	45.14	45.37	45.39	45.43	---	45.21	45.38
MAX	45.05	45.18	45.20	45.07	---	45.29	45.48	45.70	46.19	---	45.83	45.66
MIN	44.74	45.06	45.02	44.99	---	45.03	45.28	45.21	45.25	---	44.93	45.20

05483600 MIDDLE RACCOON RIVER AT PANORA, IA

LOCATION.--Lat 41°41'14", long 94°22'15", in NE1/4 NW1/4 sec.6, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) southwest of Panora, 1.5 mi (2.4 km) upstream from Andy's Branch, 1.6 mi (2.6 km) downstream from Lake Panorama, 18.2 mi (29.3 km) upstream from mouth, and at mile 267.2 (429.9 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi^2 (1,140 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1958 to current year.

REVISED RECORDS.--WDR IOWA 1974: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft (302.118 m) NGVD.

REMARKS.--Records good. City of Panora diverts approximately 100 acre-ft/yr (0.123 hm^3/yr) above station. Flow regulated by dam on Lake Panorama since August 1970.

AVERAGE DISCHARGE.--23 years, 201 ft^3/s (5.692 m^3/s), 6.20 in/yr (157 mm/yr), 145,600 acre-ft/yr (180 hm^3/yr); median of yearly mean discharges, 170 ft^3/s (4.81 m^3/s), 5.2 in/yr (132 mm/yr), 123,000 acre-ft/yr (152 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft^3/s (396 m^3/s) May 19, 1974, gage height, 14.80 ft (4.511 m), from rating curve extended above 5,200 ft^3/s (147 m^3/s) by step-backwater analysis; no flow June 9, 10, 1977, result of gate operation at Lake Panorama; minimum daily discharge excluding regulation at Lake Panorama, 3.0 ft^3/s (0.085 m^3/s) July 9, 14, 22-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft (4.36 m), from floodmark, discharge, about 14,000 ft^3/s (396 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,380 ft^3/s (67.4 m^3/s) Aug. 14, gage height, 7.46 ft (2.274 m) result of gate operation at Lake Panorama; maximum discharge excluding regulation at Lake Panorama, 2,030 ft^3/s (57.5 m^3/s) June 30, gage height, 7.11 ft (2.167 m), no peak above base of 2,500 ft^3/s (70.8 m^3/s); minimum daily, 14 ft^3/s (0.40 m^3/s) Mar. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	21	21	19	20	16	24	22	28	602	80	80
2	19	21	21	19	19	16	23	20	28	195	813	66
3	19	21	20	19	19	16	23	20	28	219	657	59
4	21	19	20	19	19	18	29	21	25	736	399	66
5	21	19	20	19	18	18	40	34	25	550	232	60
6	19	18	20	19	18	18	41	36	24	289	161	64
7	19	19	23	19	18	18	41	35	23	188	132	70
8	20	18	25	19	18	18	44	35	24	161	90	70
9	21	19	24	19	18	18	38	35	23	164	87	68
10	19	18	24	19	18	14	36	34	21	154	72	63
11	19	17	23	19	18	44	35	28	20	94	47	57
12	18	17	24	19	18	35	38	32	19	78	47	51
13	18	19	24	19	18	20	39	33	18	72	76	46
14	18	19	23	19	18	18	36	33	18	55	427	44
15	19	18	23	19	20	20	29	28	36	92	80	39
16	19	18	23	19	21	18	29	23	171	148	72	40
17	18	19	24	19	23	19	30	23	135	74	50	36
18	18	19	24	19	38	20	27	24	97	55	36	38
19	18	19	23	18	60	20	27	24	64	54	35	33
20	19	20	22	19	70	18	25	23	52	72	45	32
21	19	19	22	19	70	18	23	22	44	64	46	32
22	19	19	21	20	72	19	27	21	40	62	48	30
23	21	21	21	20	62	20	30	76	33	55	50	30
24	20	19	21	20	46	20	28	508	36	43	53	28
25	20	19	21	20	41	20	28	121	62	32	28	29
26	19	19	21	20	112	20	28	60	78	57	30	34
27	21	19	20	20	174	20	26	43	60	347	62	35
28	21	20	20	20	18	20	29	40	49	308	121	33
29	21	20	20	20	---	22	26	41	52	138	124	33
30	21	20	20	20	---	23	24	38	1220	115	112	34
31	22	---	20	20	---	23	---	33	---	104	97	---
TOTAL	605	573	678	598	1084	627	923	1566	2553	5357	4409	1387
MEAN	19.5	19.1	21.9	19.3	38.7	20.2	30.8	50.5	85.1	173	142	46.2
MAX	22	21	25	20	174	44	44	508	1220	736	813	80
MIN	18	17	20	18	18	14	23	20	18	32	28	28
CFSM	.04	.04	.05	.04	.09	.05	.07	.12	.19	.39	.32	.11
IN.	.05	.05	.06	.05	.09	.05	.08	.13	.22	.45	.37	.12
AC-FT	1200	1140	1340	1190	2150	1240	1830	3110	5060	10630	8750	2750

CAL YR 1980 TOTAL 25980 MEAN 71.0 MAX 538 MIN 17 CFSM .16 IN 2.20 AC-FT 51530
WTR YR 1981 TOTAL 20360 MEAN 55.8 MAX 1220 MIN 14 CFSM .13 IN 1.72 AC-FT 40380

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1979 to current year.
WATER TEMPERATURES: April 1979 to current year.
SUSPENDED SEDIMENT DISCHARGE: April 1979 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 29, 1979; minimum daily, 370 micromhos Mar. 23, 24,26, 1979.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1979; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,600 mg/L April 20, 1976; minimum daily mean, 4 mg/L Dec. 31, 1979, Jan. 1, 1980.
SEDIMENT LOADS: Maximum daily, 4,050 tons (3,670 tonnes) April 20, 1979; minimum daily, 0.51 ton (0.46 tonnes) Jan. 16, 1981.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 660 micromhos July 29; minimum daily, 430 micromhos Apr. 12.
WATER TEMPERATURES: Maximum daily, 26.0°C July 15,20; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 208 mg/L May 24; minimum daily mean, 10 mg/L Jan. 16, Sept. 5,6.
SEDIMENT LOADS: Maximum daily, 804 tons (729 tonnes) June 30; minimum daily, 0.51 tons (0.46 tonnes) Jan. 16.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	---	---	---	---	480	---	450	480	620	---	---
2	520	---	460	460	460	---	---	---	---	550	480	490
3	510	500	450	---	---	440	---	---	480	520	460	---
4	---	500	---	---	460	---	440	---	---	500	480	---
5	---	---	---	480	---	---	440	475	---	480	---	490
6	---	---	---	---	480	510	440	440	---	480	---	---
7	500	---	---	460	---	---	---	440	---	---	---	480
8	---	---	---	---	---	---	440	---	460	---	---	445
9	---	---	---	---	460	450	---	---	---	460	480	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	460	460	---	---	---
12	---	500	---	480	480	---	430	---	---	---	---	480
13	480	---	---	---	---	440	---	440	---	470	---	---
14	480	---	---	460	---	---	440	---	---	---	440	---
15	---	480	440	---	---	---	---	---	460	460	---	480
16	---	---	---	480	500	490	---	---	495	---	---	---
17	---	500	---	---	490	---	---	---	---	---	460	---
18	---	---	---	---	470	---	---	440	510	---	---	---
19	---	470	---	460	480	---	---	---	---	---	---	---
20	480	---	---	---	460	450	440	440	---	450	---	---
21	---	470	---	460	---	---	---	---	---	---	---	480
22	480	---	460	---	---	---	450	---	480	455	---	---
23	---	---	---	460	450	450	---	---	---	---	---	460
24	480	460	---	---	---	---	---	460	490	---	---	---
25	---	---	460	---	460	530	---	460	475	---	---	480
26	---	440	480	460	---	---	---	460	---	---	---	---
27	---	---	---	---	---	470	450	---	---	460	460	---
28	480	---	---	460	---	---	---	460	520	470	470	480
29	480	---	470	470	---	---	450	470	500	660	480	---
30	---	---	---	---	---	440	---	---	515	---	---	490
31	530	---	460	---	---	---	---	---	---	---	480	---

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	---	---	---	---	3.0	---	18.0	20.0	23.0	---	---
2	15.0	---	1.0	1.0	.0	---	---	---	---	25.0	20.0	10.0
3	11.0	10.0	1.0	---	---	4.0	---	---	20.0	24.0	22.0	---
4	---	8.0	---	---	.0	---	10.0	---	---	23.0	23.0	---
5	---	---	---	3.0	---	---	10.0	15.0	---	25.0	---	15.0
6	---	---	---	---	.0	4.0	10.0	16.0	---	23.0	---	---
7	---	---	---	.0	---	---	---	15.0	---	---	---	20.0
8	---	---	---	---	---	---	10.0	---	26.0	---	20.0	20.0
9	---	---	---	---	.0	5.0	---	---	---	24.0	24.0	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	14.0	20.0	---	---	---
12	---	7.0	---	2.0	.0	---	10.0	---	---	---	---	21.0
13	8.0	---	---	---	---	5.0	---	15.0	---	---	---	---
14	8.0	---	---	3.0	---	---	10.0	---	---	---	25.0	---
15	---	8.0	2.0	---	---	---	---	---	24.0	26.0	---	20.0
16	---	---	---	.0	5.0	6.0	---	---	21.0	---	---	---
17	---	5.0	---	---	5.0	---	---	---	---	---	24.0	---
18	---	---	---	---	6.0	---	---	13.0	21.0	---	---	---
19	---	.5	---	4.0	5.0	---	---	---	---	---	---	---
20	11.0	---	---	---	5.0	7.0	10.0	15.0	---	26.0	---	---
21	---	5.0	---	4.0	---	---	---	---	---	---	---	21.0
22	11.0	---	.0	---	---	---	11.0	---	22.0	25.0	---	---
23	---	---	---	7.0	3.0	7.0	---	---	---	---	---	19.0
24	9.0	5.0	---	---	---	---	---	18.0	24.0	---	---	---
25	---	---	.0	---	3.0	8.5	---	19.0	24.0	---	---	16.0
26	---	4.0	.0	.0	---	---	---	19.0	---	---	---	---
27	---	---	---	---	---	9.0	17.0	---	---	25.0	23.0	---
28	6.0	---	---	1.0	---	---	---	20.0	25.0	24.0	22.0	16.0
29	6.0	---	1.0	.0	---	---	17.0	19.0	23.0	22.0	23.0	---
30	---	---	---	---	---	10.0	---	---	22.0	---	---	18.0
31	---	---	2.0	---	---	---	---	---	---	---	21.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER	
1	27	1.4	26	1.4	25	1.4
2	35	1.8	24	1.4	23	1.3
3	33	1.7	23	1.3	18	.97
4	30	1.7	31	1.6	17	.92
5	31	1.8	35	1.8	16	.86
6	28	1.4	37	1.8	15	.81
7	29	1.5	37	1.9	16	.99
8	30	1.6	35	1.7	19	1.3
9	29	1.6	33	1.7	17	1.1
10	30	1.5	29	1.4	18	1.2
11	30	1.5	24	1.1	16	.93
12	29	1.4	19	.87	15	.97
13	30	1.5	19	.97	14	.91
14	35	1.7	21	1.1	14	.87
15	36	1.8	23	1.1	14	.87
16	36	1.8	23	1.1	14	.87
17	38	1.8	23	1.2	13	.84
18	40	1.9	31	1.6	12	.78
19	44	2.1	44	2.3	13	.81
20	48	2.3	41	2.2	18	1.1
21	48	2.3	29	1.5	23	1.4
22	34	1.7	28	1.4	26	1.5
23	30	1.7	27	1.5	24	1.4
24	32	1.7	26	1.3	25	1.4
25	32	1.7	25	1.3	27	1.5
26	33	1.7	23	1.2	20	1.1
27	30	1.7	25	1.3	20	1.1
28	26	1.5	23	1.2	23	1.2
29	23	1.3	22	1.2	29	1.6
30	29	1.6	22	1.2	38	2.1
31	24	1.4	---	---	40	2.2
TOTAL	---	52.1	---	42.64	---	36.30

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	JANUARY		FEBRUARY		MARCH	
1	32	1.6	25	1.4	43	1.9
2	24	1.2	30	1.5	43	1.9
3	28	1.4	23	1.2	43	1.9
4	38	1.9	12	.62	49	2.4
5	50	2.6	12	.58	71	3.5
6	47	2.4	12	.58	85	4.1
7	36	1.8	21	1.0	80	3.9
8	32	1.6	29	1.4	67	3.3
9	29	1.5	37	1.8	58	2.8
10	27	1.4	31	1.5	53	2.0
11	26	1.3	23	1.1	88	8.1
12	24	1.2	15	.73	63	6.0
13	25	1.3	12	.58	50	2.7
14	23	1.2	12	.58	48	2.3
15	16	.82	21	1.1	45	2.4
16	10	.51	35	2.0	33	1.6
17	12	.62	34	2.1	33	1.7
18	19	.97	36	3.7	38	2.1
19	30	1.5	34	5.5	49	2.6
20	24	1.2	34	6.4	55	2.7
21	16	.77	34	6.4	46	2.2
22	16	.81	38	7.4	36	1.8
23	17	.92	43	7.2	25	1.4
24	22	1.2	35	4.3	20	1.1
25	32	1.7	30	3.3	45	2.4
26	48	2.6	68	21	65	3.5
27	40	2.2	120	56	55	3.0
28	27	1.5	45	2.2	47	2.5
29	17	.92	---	---	44	2.6
30	16	.86	---	---	33	2.0
31	19	1.0	---	---	31	1.9
TOTAL	---	42.58	---	143.17	---	84.3

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCENTRATION (MG/L) APRIL	LOADS (T/DAY) APRIL	MEAN CONCENTRATION (MG/L) MAY	LOADS (T/DAY) MAY	MEAN CONCENTRATION (MG/L) JUNE	LOADS (T/DAY) JUNE	MEAN CONCENTRATION (MG/L) JULY	LOADS (T/DAY) JULY	MEAN CONCENTRATION (MG/L) AUGUST	LOADS (T/DAY) AUGUST	MEAN CONCENTRATION (MG/L) SEPTEMBER	LOADS (T/DAY) SEPTEMBER
1	33	2.1	56	3.3	18	1.2	33	54	20	4.3	17	3.7
2	38	2.4	49	2.6	30	2.3	26	14	99	217	17	3.0
3	50	3.1	44	2.4	40	3.0	48	28	57	101	14	2.2
4	75	5.9	35	3.2	41	2.8	66	131	28	30	12	2.1
5	53	5.7	50	4.6	43	2.9	44	65	31	19	10	1.6
6	61	6.8	38	3.7	44	2.9	29	23	33	14	10	1.5
7	64	7.1	38	3.6	44	2.7	37	19	35	12	13	2.5
8	76	9.0	39	3.7	45	2.9	37	15	38	9.2	15	2.8
9	78	8.0	41	3.9	42	2.6	37	15	40	9.4	16	2.9
10	78	7.6	40	3.7	38	2.2	38	16	41	8.0	18	3.1
11	77	7.3	39	2.9	33	1.8	32	8.1	43	5.5	19	2.9
12	77	7.9	45	3.9	35	1.8	26	5.5	44	5.6	21	2.9
13	67	7.1	48	4.3	37	1.8	18	3.5	48	9.8	22	2.7
14	61	5.0	48	4.3	38	1.8	18	2.7	110	127	22	2.6
15	46	3.6	47	3.6	48	4.7	36	8.7	38	8.2	22	2.3
16	55	4.3	44	2.7	34	16	39	16	37	7.2	23	2.5
17	55	4.5	43	2.7	32	12	34	6.8	31	4.2	27	2.6
18	52	3.8	45	2.9	35	9.2	29	4.3	28	2.7	30	2.8
19	54	3.9	49	3.2	38	6.6	25	3.6	30	2.8	38	3.4
20	66	4.4	52	3.2	43	6.0	20	3.9	35	4.3	47	4.1
21	63	3.9	52	3.1	49	5.8	17	2.9	34	4.2	58	5.0
22	65	4.7	53	3.0	52	5.6	13	2.2	35	4.5	68	5.5
23	70	5.7	83	17	45	4.0	14	2.1	39	5.3	70	5.7
24	67	5.1	208	285	41	4.0	13	1.5	38	5.4	48	3.6
25	65	4.9	46	15	45	7.5	14	1.2	23	1.7	26	2.0
26	60	4.5	37	6.0	46	9.7	29	4.5	23	1.9	22	2.0
27	57	4.0	39	4.5	37	6.0	35	33	36	6.0	20	1.9
28	53	4.1	48	5.2	29	3.8	23	19	49	16	20	1.8
29	55	3.9	44	4.9	36	5.1	23	8.6	33	11	28	2.5
30	55	3.6	36	3.7	177	804	23	7.1	22	6.7	48	4.4
31	---	---	25	2.2	---	---	22	6.2	17	4.5	---	---
TOTAL	---	153.9	---	418.0	---	942.7	---	531.4	---	668.4	---	88.6

TOTAL LOAD FOR YEAR: 3204.01 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
07...	1320	16.5	19	32	1.6	97
NOV						
19...	1010	.5	18	17	.83	90
MAY						
05...	1313	11.0	34	47	4.3	84
JUN						
16...	1000	22.0	148	43	17	60
JUL						
29...	1300	22.0	135	22	8.0	88
SEP						
08...	1505	20.0	72	24	4.7	81

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
07...	1320	19	7	1	2	4	15
NOV							
19...	0945	18	7	1	2	9	36
MAR							
25...	0935	19	7	2	4	7	25
MAY							
05...	1313	34	5	1	3	15	39
JUN							
16...	1000	148	7	2	3	9	29
JUL							
29...	1300	135	5	1	2	12	32
SEP							
08...	1505	72	7	2	4	17	47

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
OCT							
07...	25	32	37	48	64	87	100
NOV							
19...	65	75	82	87	97	100	--
MAR							
25...	56	68	75	82	93	100	--
MAY							
05...	55	59	63	69	74	91	100
JUN							
16...	61	75	80	84	90	100	--
JUL							
29...	52	66	73	81	89	100	--
SEP							
08...	77	84	88	92	98	100	--

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°34'48", long 94°10'58", in SW1/4 SW1/4 sec.3, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway at Redfield, 0.8 mi (1.3 km) downstream from bridge on U.S. Highway 6, 1.0 mi (1.6 km) downstream from Middle Raccoon River, 16.4 mi (26.4 km) upstream from mouth, and at mile 248.0 (399.0 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--988 mi^2 (2,559 km^2).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940.

GAGE.--Water-stage recorder. Datum of gage is 896.43 ft (273.232 m) NGVD. Prior to June 12, 1946, nonrecording gage, and June 12, 1946, to Sept. 30, 1965, water-stage recorder at site 20 ft (6 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 435 ft^3/s (12.32 m^3/s), 5.98 in/yr (152 mm/yr), 315,200 acre-ft/yr (389 hm^3/yr); median of yearly mean discharges, 380 ft^3/s (10.8 m^3/s), 5.2 in/yr (132 mm/yr), 275,000 acre-ft/yr (339 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft^3/s (991 m^3/s) July 2, 1958, gage height, 29.04 ft (8.851 m), from floodmark; minimum daily, 17 ft^3/s (0.48 m^3/s) Aug. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,430 ft^3/s (68.8 m^3/s) May 23, gage height, 7.08 ft (2.158 m), no peak above base of 5,000 ft^3/s (142 m^3/s); minimum daily, 40 ft^3/s (1.13 m^3/s) Jan. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	62	58	51	62	103	71	48	62	1150	129	149
2	50	59	60	48	56	97	64	47	62	384	647	126
3	48	60	55	43	58	85	69	46	67	293	1460	110
4	48	61	60	40	64	90	98	46	60	1140	556	174
5	51	58	61	43	59	93	120	124	51	1010	416	176
6	52	58	63	46	56	87	107	88	49	600	264	123
7	51	58	66	47	55	77	94	70	96	275	217	127
8	50	58	62	46	54	73	90	65	93	252	160	186
9	49	60	59	46	54	72	87	55	53	195	136	147
10	49	58	57	45	52	72	79	56	48	256	123	126
11	46	58	63	50	52	72	77	51	45	167	101	111
12	45	58	64	55	59	110	101	58	49	123	69	103
13	46	63	65	58	68	96	93	60	45	108	87	94
14	50	70	60	59	81	70	84	64	42	96	767	87
15	51	68	59	61	106	67	73	53	183	78	303	78
16	63	67	58	61	190	67	65	53	367	212	178	75
17	60	63	54	62	250	65	67	51	249	174	137	75
18	53	64	50	68	425	63	67	59	181	99	88	69
19	57	68	48	71	410	61	61	59	145	87	70	66
20	62	73	45	76	251	58	60	55	123	118	66	61
21	54	73	50	81	190	60	59	49	105	108	72	59
22	52	67	47	84	180	62	79	56	87	111	70	58
23	57	67	48	86	169	62	90	582	72	81	71	55
24	82	68	45	91	142	59	76	1120	93	75	96	54
25	65	52	42	94	127	64	66	360	75	60	78	58
26	56	64	45	98	117	70	61	161	117	83	225	70
27	60	68	46	90	330	65	58	114	108	256	244	65
28	68	66	48	78	132	63	56	93	96	473	226	58
29	67	66	50	61	---	67	55	81	90	283	275	56
30	63	66	51	62	---	74	51	80	862	170	228	58
31	63	---	52	63	---	74	---	70	---	153	179	---
TOTAL	1741	1901	1681	1964	3849	2299	2278	4004	3775	8640	7838	2854
MEAN	56.2	63.4	54.2	63.4	137	74.2	75.9	129	126	279	253	95.1
MAX	82	73	66	98	425	110	120	1120	862	1150	1460	186
MIN	45	52	42	40	52	58	51	46	42	53	66	54
CFSM	.06	.06	.06	.06	.14	.08	.08	.13	.13	.28	.26	.10
IN.	.07	.07	.06	.07	.14	.09	.09	.15	.14	.33	.30	.11
AC-FT	3450	3770	3330	3900	7630	4560	4520	7940	7490	17140	15550	5660

CAL YR 1980 TOTAL 62111 MEAN 170 MAX 1830 MIN 42 CFSM .17 IN 2.34 AC-FT 123200
WTR YR 1981 TOTAL 42824 MEAN 117 MAX 1460 MIN 40 CFSM .12 IN 1.61 AC-FT 84940

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	171	146	111	127	314	834	592	675	984	453	303	218	411
RUNOFF (INCHES)	0.20	0.16	0.13	0.15	0.33	0.97	0.67	0.79	1.11	0.53	0.35	0.25	5.65
STD. DEVIATION	0.19	0.11	0.08	0.12	0.24	0.83	0.53	0.66	1.11	0.57	0.31	0.24	2.69
PERCENT OF ANNUAL	3.6	2.8	2.3	2.7	5.8	17	12	14	20	9.4	6.2	4.4	----
PRECIP. (INCHES)	1.8	1.2	0.8	0.8	1.0	2.0	2.8	3.9	5.9	3.4	3.6	2.8	29.9

05484500 RACCOON RIVER AT VAN METER, IA

LOCATION.--Lat 41°32'02", long 93°56'59", in SW1/4 SW1/4 sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100007, on right bank 10 ft (3.0 m) downstream from bridge on county highway R16, 0.3 mi (0.5 km) northeast of Van Meter, 0.7 mi (1.1 km) upstream from small left bank tributary, 1.1 mi (1.8 km) downstream from confluence of North and South Raccoon Rivers, 29.0 mi (46.7 km) upstream from mouth, and at mile 230.5 (370.9 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,441 mi^2 (8,912 km^2).

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1927 (M). WSP 1438: Drainage area. WSP 1508: 1915 (M), 1916-17, 1918-23 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 841.16 ft (256.386 m) NGVD. See WSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Records good except those for December through February which are poor. Corps of Engineers rain-gage and gage-height telemeters at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--66 years, 1,284 ft^3/s (36.36 m^3/s), 5.07 in/yr (129 mm/yr), 930,300 acre-ft/yr (1,150 hm^3/yr); median of yearly mean discharges, 1,120 ft^3/s (31.7 m^3/s), 4.4 in/yr (112 mm/yr), 811,000 acre-ft/yr (1,000 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,200 ft^3/s (1,170 m^3/s) June 13, 1947, gage height, 21.37 ft (6.514 m), from floodmark; maximum gage height, 21.77 ft (6.635 m) July 3, 1958; minimum daily discharge, 10 ft^3/s (0.28 m^3/s) Jan. 22-31, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,130 ft^3/s (117 m^3/s) July 4, gage height, 7.12 ft (2.170 m), no peak above base of 8,500 ft^3/s (241 m^3/s); minimum daily, 90 ft^3/s (2.55 m^3/s) Feb. 10-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	246	162	114	95	238	165	151	397	3200	729	987
2	258	240	153	110	95	219	162	147	354	1700	683	1020
3	235	237	147	110	94	209	175	146	321	1420	2170	833
4	225	231	125	98	94	205	234	141	287	3120	1800	745
5	221	226	130	98	93	205	237	171	265	3390	1430	707
6	216	225	150	102	92	193	276	213	253	2700	1490	545
7	211	223	175	104	92	178	281	197	259	2200	1300	480
8	202	219	160	106	91	167	274	243	329	1880	1030	500
9	191	210	160	103	91	165	253	286	235	1500	808	489
10	181	199	165	100	90	162	238	295	212	1250	663	415
11	171	194	160	98	90	159	228	288	203	1040	587	349
12	159	198	155	97	90	180	241	274	189	817	470	281
13	157	206	150	96	93	164	242	266	180	690	390	277
14	164	214	160	98	100	163	220	265	175	596	784	272
15	163	208	150	100	132	151	205	249	424	528	1000	250
16	174	194	143	99	190	145	195	237	669	508	501	237
17	193	194	143	98	260	145	196	234	1610	583	384	217
18	193	192	135	99	340	142	195	238	1560	439	309	206
19	181	185	126	102	450	139	183	231	1250	373	264	197
20	181	189	117	104	540	135	174	223	982	352	243	192
21	259	193	116	107	783	136	170	219	792	342	233	186
22	305	191	115	108	703	142	188	224	663	322	225	175
23	300	191	117	109	581	141	220	383	548	367	215	174
24	316	193	120	110	461	139	200	1590	781	403	213	170
25	299	165	117	106	365	145	195	753	675	337	232	174
26	267	170	115	100	304	152	189	439	699	352	223	166
27	263	165	113	99	308	157	185	661	605	1100	522	175
28	272	173	113	98	398	160	172	759	499	1510	976	168
29	260	177	116	97	---	169	163	634	479	1270	921	167
30	256	183	117	96	---	175	154	529	602	1130	877	165
31	256	---	122	96	---	171	---	466	---	877	861	---
TOTAL	7007	6031	4247	3162	7195	5151	6210	11152	16497	36296	22533	10919
MEAN	226	201	137	102	257	166	207	360	550	1171	727	364
MAX	316	246	175	114	783	238	281	1590	1610	3390	2170	1020
MIN	157	165	113	96	90	135	154	141	175	322	213	165
CFSM	.07	.06	.04	.03	.08	.05	.06	.11	.16	.34	.21	.11
IN.	.08	.07	.05	.03	.08	.06	.07	.12	.18	.39	.24	.12
AC-FT	13900	11960	8420	6270	14270	10220	12320	22120	32720	71990	44690	21660

CAL YR 1980 TOTAL 281304 MEAN 769 MAX 3960 MIN 113 CFSM .22 IN 3.04 AC-FT 558000
WTR YR 1981 TOTAL 136400 MEAN 374 MAX 3390 MIN 90 CFSM .11 IN 1.47 AC-FT 270500

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	615	482	328	363	759	2,460	2,540	2,340	3,590	1,720	932	699	1,400
RUNOFF (INCHES)	0.21	0.16	0.11	0.12	0.23	0.82	0.82	0.78	1.16	0.58	0.31	0.23	5.52
STD. DEVIATION	0.26	0.14	0.09	0.12	0.18	0.64	0.76	0.64	0.94	0.53	0.35	0.28	2.93
PERCENT OF ANNUAL	3.8	2.9	2.0	2.2	4.2	15	15	14	21	10	5.6	4.2	----
PRECIP. (INCHES)	2.0	1.3	0.9	1.0	0.9	2.0	2.8	3.8	4.8	3.1	3.8	3.2	29.7

05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in SW1/4 SE1/4 sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft (8 m) downstream from bridge on 63rd Street in Des Moines, and 2.2 mi (3.5 km) upstream from Raccoon River.

DRAINAGE AREA.--78.4 mi² (203 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR Iowa 1973: 1972. WDR IA-75-1: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 801.04 ft (244.157 m) NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years, 58.8 ft³/s (1.665 m³/s), 9.87 in/yr (251 mm/yr), 42,600 acre-ft/yr (52.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft³/s (255 m³/s) July 1, 1973, gage height, 17.72 ft (5.401 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 23	2130	1,560	44.2	11.93	3.636	July 17	1345	1,440	40.8	11.44	3.487
June 24	0300	1,420	40.2	11.49	3.502	Aug. 14	2315	1,700	48.1	12.25	3.734
July 3	2400	*2,190	62.0	*13.47	4.106	Aug. 28	1115	643	18.2	8.45	2.576

Minimum daily discharge, 0.25 ft³/s (0.007 m³/s) Oct. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	3.3	1.3	1.6	.94	3.3	1.0	.50	4.5	14	5.4	11
2	1.5	3.0	2.0	1.5	.92	3.0	1.5	2.0	6.0	12	35	11
3	.50	3.0	2.5	1.4	.90	3.0	3.0	1.5	4.5	272	12	10
4	.50	3.0	3.0	1.3	.88	4.1	4.5	1.0	3.3	907	7.1	27
5	.50	3.0	3.3	1.2	.88	3.0	2.0	.75	3.0	168	9.6	9.9
6	.50	3.0	3.7	1.1	.88	2.5	2.0	.55	2.5	81	4.9	7.9
7	.50	3.7	20	1.0	.88	3.0	1.5	.50	15	47	4.5	49
8	.50	4.1	13	.96	.90	2.5	4.9	1.0	10	30	26	13
9	1.0	3.7	4.9	.94	.92	2.5	2.5	1.0	6.5	36	24	9.4
10	.50	3.7	4.0	.92	.94	3.0	4.1	.75	4.9	20	5.4	7.6
11	.25	4.1	3.1	.90	.94	3.3	3.7	.60	7.8	15	4.3	5.8
12	.50	4.1	2.8	.88	.98	3.7	2.5	.55	4.1	12	3.5	4.8
13	1.5	12	2.5	.94	1.1	3.7	3.0	2.0	4.1	9.1	11	4.0
14	2.5	5.4	2.3	1.0	1.3	3.7	3.7	4.5	22	7.1	169	3.6
15	2.5	3.7	2.1	1.1	1.5	3.7	1.5	1.6	88	8.2	178	3.1
16	9.1	3.3	2.0	1.0	2.0	3.7	3.7	.75	17	6.0	28	2.5
17	3.0	2.3	2.0	.96	4.0	3.7	2.5	3.3	11	161	20	1.8
18	2.0	1.5	2.2	.94	7.7	3.3	1.5	7.5	7.8	25	16	2.0
19	1.5	1.0	2.5	.97	14	3.0	1.0	2.0	4.9	15	13	2.0
20	2.0	1.1	2.3	1.0	25	3.3	2.0	1.0	3.7	15	11	1.8
21	2.5	1.2	2.1	1.1	20	4.1	1.5	1.0	7.8	8.2	9.8	1.5
22	2.0	1.1	2.0	1.2	13	4.5	11	8.2	4.9	6.5	8.7	1.5
23	18	1.0	1.9	1.3	8.7	4.1	4.1	240	3.0	4.9	8.3	1.5
24	11	.86	1.8	1.4	6.0	3.7	2.5	89	532	4.5	9.3	9.6
25	3.7	.80	1.7	1.5	4.9	2.5	2.5	18	74	37	8.2	19
26	3.0	.75	1.6	1.4	4.1	2.0	2.5	13	32	27	25	10
27	7.1	.80	1.5	1.3	4.5	1.0	2.0	9.6	20	23	15	1.8
28	10	.88	1.4	1.2	4.1	2.0	1.5	8.7	15	15	132	1.2
29	4.5	.92	1.4	1.1	---	5.4	1.0	8.2	78	10	34	1.9
30	3.7	1.0	1.5	1.0	---	3.0	.75	6.0	21	7.8	19	.70
31	3.7	---	1.7	.96	---	1.0	---	4.9	---	5.4	15	---
TOTAL	101.05	81.31	100.2	35.07	132.86	98.3	81.45	439.95	1018.3	2009.7	872.0	235.90
MEAN	3.26	2.71	3.23	1.13	4.75	3.17	2.72	14.2	33.9	64.8	28.1	7.86
MAX	18	12	20	1.6	25	5.4	11	240	532	907	178	49
MIN	.25	.75	1.3	.88	.88	1.0	.75	.50	2.5	4.5	3.5	.70
CFSM	.04	.04	.04	.01	.06	.04	.04	.18	.43	.83	.36	.10
IN.	.05	.04	.05	.02	.06	.05	.04	.21	.48	.95	.41	.11
AC-FT	200	161	199	70	264	195	162	873	2020	3990	1730	468

CAL YR 1980 TOTAL 7473.61 MEAN 20.4 MAX 486 MIN .01 CFSM .26 IN 3.55 AC-FT 14820
WTR YR 1981 TOTAL 5206.09 MEAN 14.3 MAX 907 MIN .25 CFSM .18 IN 2.47 AC-FT 10330

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'30", long 93°35'48", in NE1/4 SE1/4 sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on Southeast 14th Street at Des Moines, 0.8 mi (1.3 km) downstream from Raccoon River and Scott Street Dam, and at mile 200.7 (322.9 km).

DRAINAGE AREA.--9,879 mi^2 (25,586 km^2).

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage recorder. Datum of gage is 762.52 ft (232.42 m) NGVD. Prior to Oct. 1, 1951, and Oct. 1, 1953, to Sept. 30, 1959, water-stage recorder above Scott Street Dam, 0.8 mi (1.3 km) upstream at datum 11.16 ft (3.40 m) higher. Oct. 1, 1951, to Sept. 30, 1953, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi (5.6 km) above station. Average daily pumpage was about 55 ft^3/s (1.56 m^3/s). At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir, capacity, 4,800 acre-ft (5.92 hm^3). Effluent from sewage treatment plant enters the river 2.3 mi (3.7 km) below station. Net effect of diversions not known. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (station 05481630) 13.0 mi (20.9 km) upstream, since Apr. 12, 1977. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers. Average monthly pumpage from galleries furnished by Des Moines Water Works.

AVERAGE DISCHARGE.--41 years, 4,021 ft^3/s (113.9 m^3/s), 5.53 in/yr (140 mm/yr), 2,913,000 acre-ft/yr (3,590 hm^3/yr); median of yearly mean discharges, 3,490 ft^3/s (98.8 m^3/s), 4.8 in/yr (122 mm/yr), 2,530,0000 acre-ft/yr (3,119 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,000 ft^3/s (2,180 m^3/s) June 26, 1947, gage height, 20.8 ft (6.34 m) in gage well, 21.5 ft (6.58 m) from outside floodmark, site and datum then in use; minimum daily, 26 ft^3/s (0.74 m^3/s) Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903, reached a stage of 20.9 ft (6.37 m), from flood profile, at Scott Street site and datum, by office of Des Moines City Engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,900 ft^3/s (450 m^3/s) July 4, gage height, 18.53 ft (5.648 m); minimum daily, 220 ft^3/s (6.23 m^3/s) Jan. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1980	1250	796	320	250	1120	449	941	2900	13900	4680	3570
2	1820	1250	640	350	270	977	505	905	2600	14300	4760	3280
3	1610	1220	645	380	300	912	588	815	2070	12200	4990	3150
4	1370	1360	536	370	330	828	666	815	1950	13900	5770	2850
5	1340	1140	532	370	380	801	891	828	1780	12300	5800	2730
6	1340	1130	567	380	380	781	1100	934	1690	11100	5480	2650
7	1310	1080	734	350	370	768	1330	1050	1420	9550	5020	2610
8	1320	1060	951	370	400	748	1650	1250	1450	8200	4290	2190
9	1280	1050	930	420	440	702	1760	1450	1220	7400	3930	1920
10	1240	1030	919	480	380	603	1260	1840	1170	6740	3580	1630
11	1180	1040	731	440	440	597	1220	1780	1160	6110	3080	1380
12	1010	1030	530	390	500	597	1210	1610	1140	5710	2490	1230
13	870	1080	631	320	490	615	1250	1620	1120	5050	2200	1190
14	815	1050	752	300	500	597	1210	1630	1120	4440	2470	1150
15	870	1010	822	290	500	591	1180	1580	1780	3860	4250	970
16	898	934	996	320	520	545	1190	1250	2980	3320	2760	963
17	926	864	1160	330	500	505	1250	1250	4950	3370	2060	926
18	1010	877	1170	290	560	494	1330	1280	6470	3020	1730	934
19	1050	877	980	270	700	467	1150	1280	6320	2750	1650	905
20	1130	870	884	250	850	424	1120	1250	5690	2650	1580	828
21	1180	870	760	240	1060	389	977	1180	5290	2590	1530	768
22	1270	877	540	230	1790	345	955	1080	4630	2560	1500	754
23	1330	877	480	230	2310	336	992	1380	3910	2510	1450	709
24	1480	870	500	230	1930	322	1190	2800	5270	2690	1270	677
25	1470	870	660	240	1260	322	1050	2580	6040	3220	1150	748
26	1290	840	560	250	1160	308	1040	2830	8910	3720	1260	741
27	1190	790	450	250	1150	312	1030	3510	10800	4440	1100	715
28	1340	781	370	250	1230	312	1010	4250	11600	5360	2110	709
29	1410	785	300	250	---	350	999	3900	12100	5500	2530	715
30	1260	811	270	220	---	325	912	3620	12600	5330	2730	709
31	1260	---	280	240	---	363	---	3160	---	5090	3480	---
TOTAL	38829	29593	21075	9600	20960	17357	32464	55618	132030	192880	92680	44301
MEAN	1253	986	680	310	749	560	1082	1794	4401	6222	2990	1477
MAX	1980	1360	1170	480	2310	1120	1760	4250	12600	14300	5800	3570
MIN	815	781	270	220	250	308	449	815	1120	2510	1100	677
AC-FT	77020	58700	41800	19040	41570	34430	64390	110300	261900	382600	183800	87870

CAL YR 1980 TOTAL 1038477 MEAN 2829 MAX 14700 MIN 270 AC-FT 2054000
WTR YR 1981 TOTAL 687368 MEAN 1883 MAX 14300 MIN 220 AC-FT 1363000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	1,770	1,450	903	893	1,640	5,760	8,430	6,450	8,740	5,080	2,420	2,000	3,800
RUNOFF (INCHES)	0.21	0.16	0.10	0.10	0.17	0.67	0.95	0.75	0.99	0.59	0.28	0.23	5.22
STD. DEVIATION	0.24	0.19	0.09	0.11	0.15	0.47	0.94	0.57	0.76	0.54	0.26	0.25	2.86
PERCENT OF ANNUAL	4.0	3.1	1.9	1.9	3.3	13	18	14	19	11	5.4	4.4	----
PRECIP. (INCHES)	2.0	1.3	1.0	1.1	1.0	2.2	2.8	4.0	4.5	3.1	3.1	2.9	29.1

05485520 DES MOINES RIVER BELOW DES MOINES, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°33'03", long 93°31'29", in NE1/4 NE1/4 sec.20, T.7[illegible] N., R.23 W., Polk County, Hydrologic Unit 07100008, at bridge on State Highway 5 near east edge of Des Moines, 0.2 mi (0.3 km) downstream from unnamed stream, 1.4 mi (2.3 km) upstream from Fourmile Creek, and at mile 195.9 (315.2 km).

DRAINAGE AREA.--9,901 mi² (25,644 km²).

PERIOD OF RECORD.--Water years 1971, 1975-81 (discontinued).

REMARKS.--Water discharge estimated on basis of records at station (No. 05485500) 4.8 mi (7.7 km) upstream. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
FEB 26...	0830	1270	645	7.8	4.0	10.0	78	36	8600	402	.55	1380
MAR 31...	0900	450	640	7.3	12.0	8.8	81	43	K20000	411	.56	499
APR 30...	1100	880	640	7.7	17.0	9.3	94	69	3800	393	.53	934
MAY 29...	1400	3770	700	8.1	20.0	8.9	97	58	1600	378	.51	3850
JUN 26...	1200	7990	780	8.7	23.0	8.5	98	41	1200	461	.63	9950
JUL 29...	1100	5860	625	7.8	21.5	--	--	51	3600	388	.53	6140
AUG 31...	1400	3890	640	8.3	21.0	11.4	90	59	2800	404	.55	4240

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
FEB 26...	31	3.0	.830	2.1	2.90	5.9	26	.490	5	0	50	.02
MAR 31...	39	1.4	2.10	2.9	5.00	6.4	28	1.70	15	0	30	.00
APR 30...	154	1.5	.580	1.7	2.30	3.8	17	.460	8	0	40	.00
MAY 29...	92	4.3	.360	2.0	2.40	6.7	30	.290	5	0	230	.00
JUN 26...	17	12	.280	2.2	2.50	15	64	.240	7	1	20	.00
JUL 29...	142	7.5	.200	2.0	2.20	9.7	43	.310	7	0	30	.00
AUG 31...	35	7.5	.430	1.6	2.00	9.5	42	.360	7	0	60	.00

05485640 FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'50", long 93°32'43", in NE1/4 NE1/4 sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100008, on right bank 20 ft (6 m) downstream from bridge on Easton Blvd., 4.4 mi (7.1 km) downstream from Muchikinock Creek and 5.0 mi (8.0 km) upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi² (240 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 795.87 ft (242.581 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years, 63.7 ft³/s (1.804 m³/s), 9.33 in/yr (237 mm/yr), 46,150 acre-ft/yr (56.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,340 ft³/s (151 m³/s) June 9, 1974, gage height, 14.84 ft (4.523 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,260 ft³/s (35.7 m³/s) May 23, gage height, 9.68 ft (2.950 m) at 2330 hours, no other peak above base of 500 ft³/s (14.2 m³/s); minimum daily, 0.51 ft³/s (0.014 m³/s) Oct. 2.

DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	4.0	3.7	1.9	.88	4.4	3.1	2.8	5.5	5.3	3.4	9.2
2	.51	3.6	3.8	1.7	.88	3.9	3.0	2.9	4.0	4.2	78	7.1
3	.60	3.2	3.9	1.6	.86	4.0	2.9	3.1	3.3	111	25	5.9
4	1.5	3.1	4.0	1.5	.88	5.0	2.9	2.9	3.1	205	13	6.6
5	.90	3.0	4.4	1.4	.88	4.9	2.8	2.9	2.7	59	17	4.9
6	1.2	3.5	5.1	1.3	.88	4.0	2.8	2.2	2.9	28	15	4.1
7	1.2	3.8	8.8	1.2	.90	4.2	4.2	2.3	7.8	18	8.2	13
8	1.2	3.8	9.0	1.1	.90	4.7	3.4	2.1	5.4	13	5.5	6.7
9	1.5	3.9	6.1	1.1	.92	4.6	3.4	2.5	5.1	40	5.3	5.0
10	1.5	3.5	5.1	1.0	.96	4.7	5.5	2.4	4.3	19	4.2	4.0
11	1.3	3.6	4.9	.96	1.0	4.4	11	2.7	3.8	12	3.8	3.3
12	1.9	3.4	4.8	.90	1.1	4.1	5.3	1.6	4.0	8.5	2.9	2.8
13	2.0	6.1	4.9	.88	1.2	3.9	4.0	2.7	3.8	6.6	3.8	3.1
14	2.5	4.6	4.8	.84	1.4	3.9	4.5	3.3	6.2	5.1	26	3.0
15	2.6	4.0	4.7	.90	1.6	3.7	3.1	1.8	52	4.2	14	3.0
16	4.9	3.8	4.4	.96	2.7	3.8	3.6	1.5	22	3.8	7.7	4.5
17	6.1	3.6	4.0	.94	5.0	4.1	3.5	2.3	10	3.7	5.0	4.0
18	2.8	3.5	3.9	.92	10	3.8	2.7	4.0	6.4	9.4	4.1	3.3
19	2.6	3.5	3.6	.90	15	4.4	2.7	2.0	4.3	5.9	3.3	2.9
20	2.6	3.6	3.4	.88	27	4.2	2.8	1.1	4.2	3.9	3.0	2.5
21	2.6	3.7	3.1	.88	16	4.4	1.9	1.1	5.9	2.7	2.8	2.1
22	2.8	3.6	2.9	.90	14	4.6	4.7	3.2	3.6	2.3	2.8	1.5
23	7.6	3.5	2.6	.92	13	4.1	6.2	109	2.5	3.2	2.7	1.3
24	12	3.5	2.4	.96	11	3.7	4.0	155	231	2.8	3.6	2.8
25	3.2	3.5	2.2	1.0	6.1	2.9	2.9	33	65	6.4	3.2	10
26	2.7	3.4	2.0	1.1	5.7	2.9	2.7	20	23	8.4	10	7.3
27	4.0	3.3	1.9	1.0	5.0	2.9	2.8	13	12	7.6	9.4	3.7
28	5.5	3.4	1.8	.96	5.0	3.3	2.5	8.8	8.7	8.1	97	2.5
29	4.9	3.5	1.7	.94	---	5.0	2.8	6.5	8.7	4.2	59	2.3
30	3.5	3.6	1.8	.92	---	3.5	2.4	5.6	9.9	3.1	21	2.2
31	3.8	---	2.0	.90	---	3.3	---	5.2	---	2.3	13	---
TOTAL	93.01	110.1	121.7	33.36	150.74	125.2	110.1	409.5	531.1	616.8	472.7	134.6
MEAN	3.00	3.67	3.93	1.08	5.38	4.04	3.67	13.2	17.7	19.9	15.2	4.49
MAX	12	6.1	9.0	1.9	27	5.0	11	155	231	205	97	13
MIN	.51	3.0	1.7	.84	.86	2.9	1.9	1.1	2.5	2.3	2.7	1.3
CFSM	.03	.04	.04	.01	.06	.04	.04	.14	.19	.22	.16	.05
IN.	.04	.04	.05	.01	.06	.05	.04	.16	.21	.25	.19	.05
AC-FT	184	218	241	66	299	248	218	812	1050	1220	938	267

CAL YR 1980 TOTAL 6021.48 MEAN 16.5 MAX 217 MIN .51 CFSM .18 IN 2.42 AC-FT 11940
WTR YR 1981 TOTAL 2908.91 MEAN 7.97 MAX 231 MIN .51 CFSM .09 IN 1.17 AC-FT 5770

05486000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'28", long 93°39'10", in NW1/4 SW1/4 sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft (3 m) downstream from bridge on county highway R57, 1.7 mi (2.7 km) southeast of Norwalk, 5.2 mi (8.4 km) upstream from Middle Creek, and 6.2 mi (10.0 km) downstream from Badger Creek.

DRAINAGE AREA.--349 mi² (904 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1948. WDR IA-78-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft (240.320 m) NGVD (levels by Corps of Engineers). Prior to June 12, 1948, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1940, nonrecording gage at site 2.1 mi (3.4 km) upstream at different datum.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 173 ft³/s (4.899 m³/s), 6.73 in/yr (171 mm/yr), 125,300 acre-ft/yr (154 hm³/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 5.8 in/yr (147 mm/yr), 109,000 acre-ft/yr (134 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 9,100 ft³/s (258 m³/s) on basis of velocity-area studies; no flow at times during period 1954-56.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
July 5	0620	*2,750	77.9	*21.18	6.456	Aug. 2	1945	1,780	50.4	19.48	5.938

Minimum daily discharge, 0.92 ft³/s (0.026 m³/s) Jan. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	10	7.0	5.4	10	23	12	9.7	9.8	267	80	59
2	3.8	8.2	7.0	5.2	11	21	12	7.8	6.0	109	1130	43
3	3.5	4.0	8.0	5.0	11	20	10	7.1	6.2	214	1130	30
4	2.9	4.5	9.0	4.1	11	19	11	6.0	5.1	2360	330	27
5	2.9	4.0	8.0	2.9	11	19	9.5	5.8	4.5	2700	192	45
6	3.5	15	8.4	2.7	11	18	10	6.1	4.5	1760	141	46
7	3.5	17	14	2.3	12	16	31	4.5	4.0	290	101	92
8	3.8	11	19	2.0	12	14	25	4.0	431	189	86	183
9	4.8	9.4	41	1.7	13	13	22	4.2	702	140	87	104
10	4.5	7.8	34	1.5	13	11	22	4.2	135	115	118	65
11	4.0	8.4	20	.92	13	10	21	4.5	89	89	70	40
12	4.0	8.8	16	.97	14	11	52	3.6	42	73	51	30
13	4.0	8.0	13	1.6	14	11	237	3.5	35	57	41	21
14	4.5	8.4	11	1.9	15	10	117	4.5	20	44	41	15
15	4.0	7.9	8.0	2.3	16	9.8	59	5.3	32	34	66	9.9
16	6.2	8.6	7.7	1.0	24	9.8	40	7.7	515	29	56	6.5
17	6.6	9.0	7.6	1.3	43	9.6	33	7.7	220	335	39	4.3
18	7.4	8.8	10	1.7	74	9.3	30	6.1	108	447	33	4.2
19	10	8.8	15	2.0	100	9.6	26	5.2	62	528	26	6.1
20	9.2	9.0	8.8	3.5	89	9.2	25	9.8	47	150	21	7.2
21	9.2	7.0	9.0	4.0	62	9.2	23	11	40	106	17	9.7
22	9.6	7.0	4.5	4.7	47	9.6	20	8.2	37	74	15	7.9
23	13	7.0	4.3	5.4	47	10	21	7.5	37	57	13	8.0
24	13	7.0	4.2	6.2	37	11	21	7.4	142	38	12	9.9
25	11	6.7	4.1	7.2	30	11	20	189	117	44	11	22
26	12	7.9	4.0	7.0	26	11	20	105	60	95	16	33
27	10	7.5	3.9	8.6	25	11	21	39	41	105	28	32
28	8.0	8.4	4.0	9.4	24	12	22	27	32	234	104	24
29	8.6	9.0	4.2	10	---	12	18	19	79	172	152	19
30	10	8.4	4.5	10	---	13	12	15	572	137	96	16
31	11	---	5.0	10	---	13	---	12	---	94	64	---
TOTAL	212.4	241.8	325.5	131.49	817	398.3	1002.5	587.4	3623.1	11174	4403	1019.7
MEAN	6.85	8.06	10.5	4.40	29.2	12.8	33.4	18.9	121	360	142	34.0
MAX	13	17	41	10	100	23	237	189	702	2700	1130	183
MIN	2.9	4.0	3.9	.92	10	9.2	9.5	3.5	4.0	29	11	4.2
CFSM	.02	.02	.03	.01	.08	.04	.10	.05	.35	1.03	.41	.10
IN.	.02	.03	.03	.01	.09	.04	.11	.06	.39	1.19	.47	.11
AC-FT	421	480	646	271	1620	790	1990	1170	7190	22160	8730	2020

CAL YR 1980 TOTAL 16210.12 MEAN 44.3 MAX 1090 MIN .80 CFSM .13 IN 1.73 AC-FT 32150
WTR YR 1981 TOTAL 23960.19 MEAN 65.6 MAX 2700 MIN .92 CFSM .19 IN 2.55 AC-FT 47520

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	60	62	38	67	130	343	241	290	373	187	83	68	158
RUNOFF (INCHES)	0.20	0.20	0.12	0.22	0.39	1.13	0.77	0.94	1.19	0.52	0.27	0.21	6.15
STD. DEVIATION	0.42	0.39	0.18	0.30	0.35	0.98	0.62	0.99	1.06	0.67	0.42	0.20	4.52
PERCENT OF ANNUAL	3.1	3.3	1.9	3.5	6.3	18	13	15	20	8.3	4.4	3.4	----
PRECIP. (INCHES)	2.2	1.4	1.0	1.1	1.0	2.1	3.0	4.0	5.1	3.3	4.1	3.4	31.6

05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.--Lat 41°25'27", long 93°35'09", in SW1/4 SE1/4 sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on county highway, 0.4 mi (0.6 km) upstream from Cavitt Creek, 1.5 mi (2.4 km) upstream from bridge on U.S. Highway 69, and 4.6 mi (7.4 km) northwest of Indianola.

DRAINAGE AREA.--503 mi² (1,302 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1941, 1944, 1946, 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 776.15 ft (236.571 m) NGVD (Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, nonrecording gage and June 11, 1946, to June 8, 1947 (destroyed by flood), Nov. 24, 1948, to Sept. 7, 1951, Sept. 1, 1952, to Sept. 30, 1962, water-stage recorder at site 1.6 mi (2.6 km) downstream at datum 2.81 ft (0.856 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 247 ft³/s (7.000 m³/s) 6.67 in/yr (169 mm/yr), 179,000 acre-ft/yr (221 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s) June 13, 1947, gage heights: 26.40 ft (8.047 m), from floodmark, former site and datum; 28.27 ft (8.617 m), from floodmark, present site and datum; minimum daily, 0.11 ft³/s (0.003 m³/s) July 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,300 ft³/s (348 m³/s) July 4, gage height, 22.78 ft (6.943 m) at 0915 hours, no other peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 3.4 ft³/s (0.096 m³/s) Oct. 12,13,15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	16	8.4	10	5.0	33	19	28	30	269	60	63
2	5.7	13	8.2	9.6	5.0	30	14	27	27	188	252	44
3	5.4	11	8.8	9.0	5.0	29	14	24	27	908	286	36
4	5.4	27	9.2	8.4	5.1	28	19	24	28	9740	264	38
5	5.7	24	10	8.0	5.2	30	21	24	23	1180	150	42
6	5.4	19	11	7.8	5.4	31	20	22	18	498	109	35
7	5.4	15	17	7.6	5.6	30	2[illegible]	21	23	324	79	202
8	5.0	12	110	7.4	5.8	27	33	21	1110	241	66	176
9	4.7	9.9	71	7.4	6.0	24	37	20	240	190	66	95
10	4.7	7.9	48	7.0	6.2	22	36	19	124	154	70	62
11	4.0	6.9	35	6.9	6.4	22	35	17	74	133	50	46
12	3.4	6.9	27	6.8	6.6	20	1320	14	48	114	46	41
13	3.4	7.8	20	6.8	7.0	20	754	16	39	98	42	33
14	3.7	9.0	23	6.9	8.0	19	272	19	34	88	42	28
15	3.4	8.9	25	7.1	10	16	172	13	38	81	51	24
16	5.0	11	19	7.1	15	16	130	19	215	79	37	20
17	9.5	12	16	7.0	27	16	113	19	136	243	42	18
18	11	11	13	6.8	54	16	94	20	88	218	55	17
19	9.5	11	11	6.6	100	15	81	21	62	161	44	16
20	8.6	9.9	10	6.4	123	13	73	19	49	98	38	15
21	7.7	9.3	10	6.2	89	13	66	20	42	97	33	15
22	7.3	9.1	10	6.2	76	13	63	19	41	72	28	13
23	31	9.6	10	6.3	76	14	66	21	38	65	25	10
24	27	9.2	11	6.4	60	14	61	20	102	62	25	16
25	19	9.0	12	6.4	47	14	57	337	93	64	25	27
26	14	9.4	12	6.2	41	14	50	166	51	88	34	21
27	15	9.0	12	5.8	39	14	43	89	32	107	28	16
28	13	9.6	13	5.6	38	14	38	63	27	118	130	14
29	11	10	13	5.2	---	16	36	51	739	104	60	13
30	17	9.2	12	5.0	---	18	31	42	677	93	42	11
31	17	---	11	5.0	---	16	---	35	---	72	66	---
TOTAL	294.0	342.5	627.6	214.9	872.3	616	3792	1276	4320	15902	2384	1207
MEAN	9.48	11.4	20.2	6.93	31.2	19.9	126	41.2	144	513	76.9	40.2
MAX	31	27	110	10	123	33	1320	337	1110	9740	286	202
MIN	3.4	6.9	8.2	5.0	5.0	13	14	14	18	62	25	10
CFSM	.02	.02	.04	.01	.06	.04	.25	.08	.29	1.02	.15	.08
IN.	.02	.03	.05	.02	.06	.05	.28	.09	.32	1.18	.18	.09
AC-FT	583	680	1240	426	1730	1220	7520	2530	8570	31540	4730	2390

CAL YR 1980 TOTAL 26655.1 MEAN 72.8 MAX 2960 MIN 3.4 CFSM .15 IN 1.97 AC-FT 52870
WTR YR 1981 TOTAL 31848.4 MEAN 87.3 MAX 9740 MIN 3.4 CFSM .17 IN 2.36 AC-FT 63170

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	86	86	80	101	196	457	357	429	541	209	132	130	232
RUNOFF (INCHES)	0.20	0.19	0.13	0.23	0.41	1.06	0.79	0.98	1.20	0.48	0.30	0.29	5.26
STD. DEVIATION	0.38	0.36	0.21	0.36	0.35	0.90	0.82	0.98	1.62	0.58	0.33	0.38	3.99
PERCENT OF ANNUAL	3.2	3.0	2.1	3.7	6.5	17	13	18	19	7.7	4.8	4.6	----
PRECIP. (INCHES)	2.2	1.4	1.3	1.2	1.0	2.2	3.1	4.3	4.9	3.3	3.6	3.2	31.7

05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in SE1/4 SE1/4 sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Otter Creek, and 2.2 mi (3.5 km) southwest of Ackworth.

DRAINAGE AREA.--460 mi² (1,191 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (M), 1946.

GAGE.--Water-stage recorder. Datum of gage is 769.97 ft (234.687 m) NGVD (levels by Corps of Engineers). Prior to June 12, 1946, nonrecording gage, June 13, 1946, to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960, to Sept. 30, 1961, nonrecording gage, all at site 4.0 mi (6.4 km) downstream at datum 8.06 ft (2.457 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 235 ft³/s (6.655 m³/s), 6.94 in/yr (176 mm/yr), 170,300 acre-ft/yr (210 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s) June 5, 1947, gage height, 24.60 ft (7.498 m), site and datum then in use; maximum gage height, 32.85 ft (10.013 m) July 5, 1981; no flow Sept. 19 to Oct. 13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft (7.47 m), from information by local residents, discharge, about 30,000 ft³/s (850 m³/s), at site 4.0 mi (6.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 8	0945	5,600	159	18.00	5.486	July 5	0430	*32,700	926	*32.85	10.013

Minimum daily discharge, 2.5 ft³/s (0.071 m³/s) Oct. 1, 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	52	9.0	12	6.2	63	22	33	6.6	148	54	69
2	3.4	35	11	11	6.2	42	16	29	5.5	69	68	33
3	3.0	20	14	10	6.3	31	13	26	6.2	1320	256	20
4	3.4	12	16	9.2	6.4	43	38	24	4.6	16000	110	19
5	3.0	9.9	17	8.4	6.6	60	80	32	4.0	11600	73	48
6	3.0	8.2	19	7.8	6.8	66	43	36	4.3	1170	59	24
7	3.4	7.7	77	7.6	7.2	54	26	22	4.6	698	39	383
8	3.0	7.0	796	7.4	7.4	43	33	18	4560	500	36	251
9	2.8	7.0	317	7.3	7.8	40	37	19	1520	618	38	115
10	3.0	6.6	110	7.2	8.4	37	38	20	243	256	43	82
11	2.8	9.2	76	7.2	8.8	35	149	18	138	194	26	66
12	2.5	8.5	64	7.2	9.4	38	928	16	102	152	15	58
13	2.5	11	54	7.2	10	38	199	20	85	119	13	56
14	2.5	17	44	7.4	14	37	344	42	69	97	20	53
15	3.4	19	43	7.6	24	34	266	48	70	93	30	50
16	7.7	25	42	7.7	82	29	141	34	237	93	15	42
17	4.8	18	41	7.6	180	24	118	23	103	252	13	8.3
18	4.4	16	36	7.4	215	22	93	24	57	126	21	7.3
19	3.4	16	24	7.2	143	18	77	21	39	107	53	7.6
20	3.4	13	19	7.0	87	15	70	21	32	226	67	7.0
21	3.7	13	17	6.8	86	18	67	27	30	168	63	6.6
22	3.7	12	15	6.7	90	24	77	37	37	90	11	7.1
23	6.5	11	13	6.7	184	27	85	60	40	66	7.3	6.2
24	29	11	12	6.7	128	26	75	130	149	55	8.2	8.5
25	16	10	11	6.9	76	25	65	73	432	52	9.9	25
26	18	9.6	11	7.1	56	25	44	42	217	66	17	30
27	16	9.4	11	7.2	61	27	38	26	101	110	24	11
28	23	9.2	12	7.1	60	25	36	17	84	314	16	6.1
29	23	9.0	12	6.9	---	24	95	15	268	217	102	6.2
30	31	8.8	13	6.6	---	30	51	11	441	114	111	5.9
31	38	---	13	6.4	---	31	---	8.6	---	74	210	---
TOTAL	271.8	423.2	1969.0	236.5	1590.5	1050	3353	975.6	9088.8	35064	1628.4	1511.8
MEAN	8.77	14.1	63.5	7.63	56.8	33.9	112	31.5	303	1131	52.5	50.4
MAX	38	52	796	12	215	68	928	130	4560	16000	256	383
MIN	2.5	7.0	9.0	6.4	6.2	15	13	8.6	4.0	52	7.3	5.9
CFSM	.02	.03	.14	.02	.12	.07	.24	.07	.66	2.46	.11	.11
IN.	.02	.03	.16	.02	.13	.08	.27	.08	.74	2.84	.13	.12
AC-FT	539	839	3910	469	3150	2080	6650	1940	18030	69550	3230	3000

CAL YR 1980 TOTAL 27190.1 MEAN 74.3 MAX 6650 MIN 2.5 CFSM .16 IN 2.20 AC-FT 53930
WTR YR 1981 TOTAL 57162.6 MEAN 157 MAX 16000 MIN 2.5 CFSM .34 IN 4.62 AC-FT 113400

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	68	92	52	109	212	452	362	416	572	145	95	109	223
RUNOFF (INCHES)	0.17	0.22	0.13	0.27	0.48	1.13	0.88	1.04	1.39	0.36	0.24	0.26	6.58
STD. DEVIATION	0.40	0.46	0.20	0.47	0.60	1.13	0.84	1.15	1.92	0.70	0.33	0.43	4.19
PERCENT OF ANNUAL	2.5	3.3	2.0	4.1	7.3	17	13	16	21	5.5	3.6	4.0	----
PRECIP. (INCHES)	2.2	1.4	1.3	1.2	1.0	2.2	3.1	4.3	4.9	3.3	3.6	3.2	31.7

05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", long 93°16'08", in NW1/4 NW1/4 sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 15 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Kirk Branch, and 1.7 mi (2.7 km) northwest of Dallas.

DRAINAGE AREA.--342 mi² (886 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 759.12 ft (231.380 m) NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--19 years, 181 ft³/s (5.13 m³/s), 7.19 in/yr (183 mm/yr), 131,100 acre-ft/yr (162 hm³/yr); median of yearly mean discharges, 160 ft³/s (4.53 m³/s), 6.4 in/yr (162 mm/yr), 116,000 acre-ft/yr (143 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,300 ft³/s (348 m³/s) July 5, 1981, gage height, 26.61 ft (8.111 m); minimum daily, 0.07 ft³/s (0.002 m³/s) Sept. 29, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962, reached a stage of 28.87 ft (8.800 m), from floodmark, discharge, about 12,000 ft³/s (340 m³/s). Flood of June 6, 1947, may have been slightly higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 14	0830	3,950	112	16.14	4.919	July 5	2000	*12,300	348	*26.61	8.111
June 9	0630	4,480	127	16.95	5.166						

Minimum daily discharge, 2.7 ft³/s (0.076 m³/s) Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	31	9.0	12	6.0	77	22	45	16	213	32	28
2	3.7	28	9.6	12	5.8	72	17	37	13	113	28	12
3	3.4	22	10	12	5.7	66	18	34	12	89	44	11
4	3.4	16	14	11	5.6	60	83	31	10	6100	47	13
5	3.7	12	18	11	5.5	57	145	33	9.6	10800	33	13
6	3.4	8.6	24	11	5.4	57	76	30	9.7	4910	29	14
7	3.2	6.9	80	10	5.3	55	46	25	10	642	21	134
8	3.2	6.3	854	9.6	5.2	53	41	24	1560	402	17	67
9	3.2	8.5	565	8.8	5.1	49	39	24	3760	451	238	22
10	3.4	10	147	8.0	5.0	44	36	26	942	247	83	12
11	3.2	12	95	7.6	5.0	41	49	25	188	195	28	9.2
12	2.9	12	69	7.4	5.2	38	644	22	113	165	18	11
13	2.7	14	56	7.2	5.5	36	830	21	98	164	14	12
14	2.9	15	47	7.0	6.0	34	2770	40	75	127	14	11
15	2.9	17	40	6.8	6.8	31	1290	54	653	114	16	7.0
16	4.2	20	35	5.8	8.4	29	332	43	1640	127	18	3.7
17	4.7	21	30	6.0	80	28	231	29	317	393	11	4.9
18	4.5	17	26	5.7	270	27	171	22	136	262	9.8	6.6
19	4.5	15	24	5.6	240	23	133	22	82	138	8.9	5.4
20	5.9	13	22	5.8	200	22	118	24	60	168	7.7	4.9
21	6.2	12	19	5.4	174	23	104	22	49	111	6.9	4.8
22	6.6	12	17	5.3	165	27	92	17	80	97	6.0	3.3
23	6.2	11	16	5.2	620	29	81	23	216	79	5.7	3.0
24	8.9	10	15	5.2	213	27	71	246	230	70	7.4	7.0
25	25	9.6	14	5.2	114	26	64	374	1000	64	7.6	20
26	28	9.2	14	5.4	94	27	56	102	846	64	10	24
27	17	9.0	13	5.5	88	28	49	53	181	80	10	11
28	16	8.8	13	5.6	82	26	47	36	98	104	8.3	4.9
29	20	8.7	13	5.8	---	28	121	30	70	93	31	4.8
30	27	8.8	12	6.0	---	30	84	24	307	79	30	4.3
31	27	---	12	6.0	---	30	---	26	---	47	125	---
TOTAL	261.1	404.4	2333.6	231.4	2429.3	1199	7849	1557	12601.3	26708	927.3	486.2
MEAN	8.42	13.5	75.3	7.46	86.8	38.7	262	50.2	420	861	29.9	16.2
MAX	28	31	854	12	620	77	2770	374	3760	10800	238	134
MIN	2.7	6.3	9.0	5.2	5.0	22	17	17	9.6	47	5.7	3.0
CFSM	.03	.04	.22	.02	.25	.11	.77	.15	1.23	2.52	.09	.05
IN.	.03	.04	.25	.03	.26	.13	.85	.17	1.37	2.90	.10	.05
AC-FT	518	802	4630	459	4820	2380	15570	3090	24990	52970	1840	964

CAL YR 1980 TOTAL 28123.4 MEAN 76.8 MAX 3010 MIN 1.0 CFSM .22 IN 3.06 AC-FT 55780
WTR YR 1981 TOTAL 56635.6 MEAN 155 MAX 10800 MIN 2.7 CFSM .45 IN 6.16 AC-FT 112300

05488100 LAKE RED ROCK NEAR PELLA, IA

LOCATION.--Lat 41°22'11", long 92°58'48", in NE1/4 NW1/4 sec.19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100008, at outlet works near right end of Red Rock Dam on Des Moines River, 1.4 mi (2.3 km) upstream from Lake Creek, 4.5 mi (7.2 km) southwest of Pella and at mile 142.3 (229.0 km).

DRAINAGE AREA.--12,323 mi² (31,917 km²).

PERIOD OF RECORD.--March 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in March 1969. Releases controlled through 14 concrete conduits extending through the concrete ogee spillway section into the stilling basin. Inlet invert elevation at 690 ft (210 m) NGVD. Maximum design discharge through the conduits is 37,500 ft³/s (1,060 m³/s) but normal flood control operation limits maximum outflow to 30,000 ft³/s (850 m³/s). Spillway section consists of 5 Tainter gates, 41 ft (12 m) wide and 45 ft (14 m) high, on concrete ogee crest at elevation 736 ft (224 m). The storage capacity of the reservoir at full flood-control pool level, 780 ft (238 m), is 1,790,000 acre-ft (2,210 hm³), surface area, 65,500 acres (26,510 hm²) and that of conservation pool level, 728 feet (222 m), is 89,000 acre-feet (110 hm³), surface area, 9,980 acres (3,998 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 728 ft (222 m) with minimum release of 300 ft³/s (8.50 m³/s) and maximum release of 30,000 ft³/s (850 m³/s) during the non-growing season, providing discharges at Ottumwa and Keosauqua do not exceed 30,000 ft³/s (850 m³/s) and 35,000 ft³/s (991 m³/s) respectively.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 1,680,000 acre-ft (2,070 hm³) May 12-14, 1973; maximum elevation, 777.95 ft (237.119 m) May 14, 1973; minimum daily contents, 58,000 acre-ft (71.5 hm³) Feb. 16, 1977; minimum elevation, 719.68 ft (219.358 m) Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 300,000 acre-ft (370 hm³) July 6; maximum elevation, 741.37 ft (225.970 m) July 7; minimum daily contents, 104,000 acre-ft (128 hm³) July 3; minimum elevation, 728.03 ft (221.904 m) Mar. 27.

Capacity table (elevation, in feet, and contents, in acre-feet)

722	45,600	740	256,000	760	789,000
725	63,400	745	357,000	765	983,000
730	110,000	750	479,000	770	1,213,000
735	174,000	755	623,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109000	126000	127000	113000	116000	110000	111000	108000	110000	110000	112000	109000
2	108000	127000	125000	113000	115000	110000	111000	108000	109000	109000	111000	108000
3	106000	128000	124000	113000	115000	110000	112000	107000	108000	104000	113000	109000
4	107000	126000	124000	113000	115000	110000	113000	108000	107000	144000	114000	108000
5	108000	126000	125000	113000	115000	110000	113000	107000	107000	222000	112000	108000
6	109000	127000	126000	113000	115000	110000	112000	106000	106000	300000	111000	108000
7	110000	128000	129000	113000	116000	110000	112000	107000	106000	298000	109000	108000
8	112000	128000	131000	113000	116000	110000	112000	107000	112000	282000	107000	110000
9	114000	129000	134000	113000	116000	110000	110000	108000	119000	265000	107000	109000
10	112000	130000	133000	113000	116000	109000	112000	107000	111000	244000	108000	110000
11	116000	130000	132000	113000	116000	109000	117000	106000	108000	225000	108000	112000
12	120000	129000	132000	112000	115000	109000	121000	106000	108000	209000	108000	114000
13	122000	128000	129000	112000	115000	109000	121000	107000	106000	192000	107000	115000
14	124000	127000	129000	112000	115000	109000	117000	107000	107000	180000	107000	116000
15	125000	126000	127000	112000	116000	109000	112000	107000	107000	171000	107000	118000
16	126000	125000	125000	112000	117000	109000	111000	107000	105000	158000	108000	120000
17	126000	125000	122000	112000	118000	109000	109000	106000	105000	147000	108000	121000
18	126000	124000	120000	112000	119000	109000	109000	108000	105000	138000	107000	122000
19	126000	124000	117000	112000	120000	109000	109000	108000	106000	128000	106000	124000
20	126000	124000	115000	112000	120000	109000	109000	108000	107000	120000	106000	125000
21	126000	124000	114000	112000	120000	109000	109000	108000	106000	116000	106000	125000
22	127000	124000	113000	113000	121000	109000	109000	108000	106000	113000	107000	127000
23	127000	124000	112000	112000	120000	109000	109000	109000	109000	117000	108000	128000
24	127000	125000	112000	113000	118000	109000	109000	113000	110000	114000	109000	128000
25	127000	125000	111000	113000	113000	109000	110000	114000	109000	115000	109000	129000
26	127000	125000	111000	111000	112000	109000	110000	114000	108000	116000	109000	129000
27	127000	125000	112000	114000	113000	110000	110000	112000	110000	118000	109000	129000
28	127000	125000	112000	114000	112000	110000	110000	111000	113000	118000	109000	128000
29	126000	125000	112000	114000	---	110000	110000	111000	111000	117000	110000	128000
30	126000	125000	112000	115000	---	111000	109000	110000	111000	115000	110000	129000
31	127000	---	112000	115000	---	111000	---	110000	---	114000	108000	---
MAX	127000	130000	134000	115000	121000	111000	121000	114000	119000	300000	114000	129000
MIN	106000	124000	111000	111000	112000	109000	109000	106000	105000	104000	106000	108000

WTR YR 1981 MAX 300000 MIN 104000

05488500 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW1/4 SE1/4 sec.19, T.76 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 250 ft (76 m) upstream from abandoned Bellefountaine Bridge, 0.5 mi (0.8 km) downstream from bridge on old State Highway 92 (now relocated), 0.8 mi (1.3 km) east of Tracy, 3.1 mi (5.0 km) upstream from Cedar Creek, 3.8 mi (6.1 km) downstream from bridge on newly located State Highway 92, 6.4 mi (10.3 km) downstream from English Creek, and at mile 130.4 (209.8 km).

DRAINAGE AREA.--12,479 mi² (32,321 km²).

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 670.91 ft (204.493 m) NGVD. Prior to June 26, 1940, and June 30, 1952, to Nov. 4, 1960, nonrecording gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at site 250 ft (76 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi (19.1 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Thirteen discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--61 years, 4,641 ft³/s (131.4 m³/s), 5.05 in/yr (128 mm/yr), 3,362,000 acre-ft/yr (4,145 hm³/yr); median of yearly mean discharges, 3,970 ft³/s (112 m³/s), 4.3 in/yr (109 mm/yr), 2,880,000 acre-ft/yr (3,550 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s (4,390 m³/s), June 14, 1947, gage height, 26.5 ft (8.08 m); minimum daily, 40 ft³/s (1.13 m³/s) Jan. 29 to Feb. 1, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft (7 m), discharge, about 130,000 ft³/s (3,680 m³/s). Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,800 ft³/s (504 m³/s) July 7, gage height, 11.44 ft (3.487 m); minimum daily, 175 ft³/s (4.96 m³/s) Oct. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2440	1120	800	540	373	1890	422	1250	2910	14800	6330	4270
2	2440	1140	800	540	380	1650	421	1250	2900	14800	6350	4010
3	2080	1440	780	540	380	1190	428	1190	2780	14400	6320	3630
4	910	1830	760	540	380	1070	592	1060	2390	11900	6630	3530
5	720	1160	769	540	380	1070	841	1060	2050	13600	7310	3400
6	714	803	770	540	380	1070	1030	1030	2040	8650	7260	3090
7	673	803	800	540	390	1060	1160	900	1780	16000	7180	3180
8	355	715	1320	540	390	1080	1700	918	1770	17700	6800	3150
9	192	515	2340	540	390	1070	2120	1110	5620	17700	5680	3140
10	183	599	2470	540	390	1060	1940	1490	8100	17600	4410	2920
11	175	834	2330	540	400	1060	1730	2030	4820	16600	4310	1300
12	192	960	1820	540	420	1010	3730	1850	2080	14800	3960	958
13	237	1300	1330	480	410	875	4780	1450	1240	13400	3250	945
14	247	1600	1290	390	400	737	6560	1680	1230	11700	2990	850
15	244	1620	1310	380	390	734	6250	1970	1790	10600	3350	428
16	302	1160	2250	380	400	730	4570	1250	3580	10100	3910	420
17	718	1050	2260	380	406	735	2760	1230	4970	9190	3350	420
18	724	1050	2240	380	452	734	2190	1230	5150	9180	3060	424
19	724	1010	2100	380	548	733	1540	1230	6050	9070	2470	424
20	724	917	1900	380	650	729	1440	1230	6110	7940	2200	431
21	726	962	1800	380	1390	682	1230	1230	6140	5830	1660	433
22	732	977	1300	380	2580	572	1100	1200	5730	4370	1640	429
23	736	921	1100	380	3840	572	1090	1140	4510	3280	1630	434
24	894	758	1100	380	4700	580	1070	1450	3970	2770	1660	501
25	1100	776	1000	382	4450	536	1070	2130	6730	3080	1630	878
26	1100	780	760	376	2780	424	1130	3040	8480	3230	1630	1150
27	1120	798	560	377	1520	421	1250	3840	8470	3890	1630	1150
28	1360	803	460	381	1610	426	1260	4080	9730	5190	1700	1150
29	1870	792	520	380	---	432	1260	4080	12600	6810	2700	1100
30	1670	800	540	380	---	428	1250	4080	14100	6850	2910	775
31	1130	---	540	380	---	426	---	3650	---	6750	3390	---
TOTAL	27431	29993	40119	13806	31179	25786	57914	56328	149820	311780	119300	48820
MEAN	885	1000	1294	445	1114	832	1930	1817	4994	10060	3848	1627
MAX	2440	1830	2470	540	4700	1890	6560	4080	14100	17700	7310	4270
MIN	175	515	460	376	373	421	421	900	1230	2770	1630	420
AC-FT	54410	59490	79580	27380	61840	51150	114900	111700	297200	618400	236600	96830

CAL YR 1980 TOTAL 1195575 MEAN 3267 MAX 15800 MIN 175 AC-FT 2371000
WTR YR 1981 TOTAL 912276 MEAN 2499 MAX 17700 MIN 175 AC-FT 1809000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2,250	2,050	1,250	1,510	2,810	7,480	10,500	8,710	11,600	6,040	3,430	2,720	5,030
RUNOFF (INCHES)	0.21	0.18	0.12	0.14	0.23	0.69	0.94	0.80	1.04	0.56	0.32	0.24	5.47
STD. DEVIATION	0.23	0.22	0.11	0.17	0.16	0.49	0.87	0.62	0.88	0.40	0.33	0.22	2.91
PERCENT OF ANNUAL	3.8	3.3	2.2	2.6	4.2	13	17	15	19	10	5.9	4.4	----
PRECIP. (INCHES)	2.1	1.4	1.0	1.1	1.0	2.2	2.8	4.0	4.7	3.2	3.2	3.0	29.7

05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft (3 m) downstream from bridge on State Highway 156, 0.8 mi (1.3 km) downstream from North Cedar Creek, 1.6 mi (2.6 km) northwest of Bussey, 3.0 mi (4.8 km) upstream from Honey Creek, and 8.9 mi (14.3 km) upstream from mouth.

DRAINAGE AREA.--374 mi² (969 km²).

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 682.15 ft (207.919 m) NGVD (levels by Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--34 years, 197 ft³/s (5.579 m³/s), 7.15 in/yr (182 mm/yr), 142,700 acre-ft/yr (176 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 6.2 in/yr (157 mm/yr), 123,000 acre-ft/yr (152 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,300 ft³/s (830 m³/s) May 9, 1950, gage height, 27.50 ft (8.382 m); maximum gage height, 28.83 ft (8.787 m) July 4, 1981; no flow Sept. 6-20, 1955, Oct. 11, 12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft (8.672 m) on upstream side and 28.05 ft (8.550 m) on downstream side of bridge, levels to floodmarks by Corps of Engineers, discharge, 31,500 ft³/s (892 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,600 ft³/s (753 m³/s), July 4, gage height, 28.83 ft (8.787 m) at 2245 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 2.9 ft³/s (0.082 m³/s) Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	19	13	24	10	107	31	60	14	141	51	75
2	3.9	17	11	26	10	87	26	49	12	72	53	31
3	4.0	13	9.2	23	10	67	25	48	12	149	342	18
4	4.0	11	8.9	17	10	97	100	46	11	6350	115	15
5	3.7	9.6	8.8	16	11	261	114	49	11	13700	86	14
6	3.4	8.1	11	14	11	160	63	47	9.0	2500	92	12
7	3.8	8.8	76	14	11	102	48	39	9.1	328	48	27
8	4.9	9.0	2080	13	12	80	48	34	9.4	222	35	123
9	3.4	7.5	698	13	13	78	53	36	11	245	105	54
10	3.6	8.3	192	13	14	77	51	40	16	154	68	25
11	3.6	8.0	100	12	15	76	81	42	13	122	44	16
12	4.8	9.0	80	11	16	72	1760	35	11	104	32	13
13	2.9	10	60	10	18	70	584	34	9.7	90	27	11
14	4.6	9.5	50	9.6	20	61	2390	67	9.0	166	26	10
15	5.7	9.5	45	9.4	25	56	630	140	769	977	31	9.6
16	11	9.5	35	9.2	68	56	299	73	805	505	40	9.4
17	8.9	9.9	30	9.0	72	50	238	47	137	147	24	8.7
18	6.5	8.7	25	9.0	62	46	172	39	69	196	19	8.1
19	5.6	9.6	20	9.0	50	42	135	51	45	213	16	7.9
20	5.2	8.5	17	9.2	45	38	119	55	33	540	14	7.2
21	4.6	7.9	14	9.4	52	39	103	38	28	229	14	7.2
22	4.2	8.3	13	9.6	94	43	101	31	52	110	13	8.0
23	4.3	9.5	13	10	775	46	116	30	114	80	12	7.3
24	10	10	12	11	1260	41	93	33	216	71	27	6.5
25	17	10	13	12	701	38	77	31	895	61	32	10
26	24	10	16	13	275	40	74	25	331	56	20	21
27	17	9.9	19	14	160	41	69	22	109	168	19	21
28	19	9.3	20	15	138	36	81	18	72	324	16	14
29	38	9.3	21	14	---	36	101	17	98	204	86	11
30	31	11	21	12	---	43	80	16	621	97	33	8.2
31	24	---	22	11	---	40	---	15	---	69	129	---
TOTAL	290.8	298.7	3753.9	401.4	3958	2128	7862	1307	4551.2	28390	1669	609.1
MEAN	9.38	9.96	121	12.9	141	68.6	262	42.2	152	916	53.8	20.3
MAX	38	19	2080	26	1260	261	2390	140	895	13700	342	123
MIN	2.9	7.5	8.8	9.0	10	36	25	15	9.0	56	12	6.5
CFSM	.03	.03	.32	.03	.38	.18	.70	.11	.41	2.45	.14	.05
IN.	.03	.03	.37	.04	.39	.21	.78	.13	.45	2.82	.17	.06
AC-FT	577	592	7450	796	7850	4220	15590	2590	9030	56310	3310	1210

CAL YR 1980 TOTAL 46648.2 MEAN 127 MAX 4650 MIN 2.9 CFSM .34 IN 4.64 AC-FT 92530
WTR YR 1981 TOTAL 55219.1 MEAN 151 MAX 13700 MIN 2.9 CFSM .40 IN 5.49 AC-FT 109500

05489090 SOUTH COAL CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'10", long 92°47'36", in SE1/4 SE1/4 sec.10, T.74 N., R.17 W., Mahaska County, Hydrologic Unit 07080105, on right bank 800 ft (244 m) upstream from bridge on county highway, 2.9 mi (4.7 km) upstream from mouth and 6.5 mi (10.5 km) northeast of Bussey.

DRAINAGE AREA.--12.9 mi^2 (33.4 km^2).

PERIOD OF RECORD.--July 1976 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 671.67 ft (204.725 m) NGVD.

REMARKS.--Records good except those for winter period and discharges over 200 ft^3/s (5.7 m^3/s) which are poor. Several observations of water temperature were made during the period.

AVERAGE DISCHARGE.--5 years, 7.24 ft^3/s (0.205 m^3/s), 7.62 in/yr (194 mm/yr), 5,240 acre-ft/yr (6.46 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft^3/s (46.7 m^3/s) July 7, 1978, gage height, 15.16 ft (4.621 m) from rating extended above 200 ft^3/s (5.66 m^3/s) on basis of velocity-area studies, no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft^3/s (8.50 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Apr. 12	0145	831	23.5	12.69	3.868	June 29	2130	912	25.8	12.98	3.956
June 15	1800	*976	27.6	*13.20	4.023	July 4	0915	652	18.5	11.99	3.655
June 24	0845	332	9.40	10.40	3.170	July 15	0845	875	24.8	12.85	3.917

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.77	.58	.37	.30	1.7	.29	1.3	.17	4.4	1.1	.12
2	.00	.66	.62	.35	.29	1.4	.17	1.2	.17	2.4	2.6	.13
3	.00	.60	.56	.33	.28	1.1	.22	1.1	.17	55	4.0	.11
4	.00	.60	.50	.29	.28	2.3	1.0	1.1	.12	293	1.2	.11
5	.00	.60	.61	.27	.29	3.0	1.1	1.1	.04	11	1.1	.12
6	.00	.60	.82	.26	.30	1.2	.71	.91	.02	4.4	3.8	.08
7	.00	.60	21	.25	.31	.84	.60	.77	.03	2.4	1.1	3.0
8	.00	.50	45	.24	.33	.77	.77	.71	.09	1.7	.84	1.2
9	.00	.61	5.0	.23	.35	.84	.91	.91	.29	6.0	.77	.37
10	.00	.50	1.6	.24	.37	.77	.77	.84	.17	1.1	.62	.13
11	.00	.45	1.1	.23	.41	.77	39	.71	.06	.84	.48	.11
12	.00	.55	.99	.22	.45	.77	228	.65	.12	.71	.38	.09
13	.00	.60	.80	.22	.52	.71	35	.77	.12	.50	.34	.06
14	.03	.60	.68	.22	.60	.50	74	1.7	.06	.29	.36	.04
15	.00	.61	.61	.23	.90	.50	10	1.3	225	224	.41	.03
16	.23	.60	.50	.23	1.4	.50	7.5	.84	7.5	4.9	.27	.06
17	.32	.55	.42	.24	1.6	.39	6.0	.71	2.4	1.8	.17	.06
18	.43	.55	.34	.27	1.4	.39	4.0	.77	1.7	1.2	.16	.05
19	.31	.55	.29	.35	1.2	.22	3.4	.71	1.3	1.7	.12	.06
20	.28	.55	.23	.70	1.0	.17	2.6	.65	1.1	3.4	.07	.04
21	.24	.55	.22	.45	1.2	.22	1.9	.50	1.1	4.6	.13	.03
22	.23	.55	.21	.37	10	.39	2.6	.50	1.5	2.8	.11	.03
23	.27	.60	.21	.33	20	.29	2.6	.71	1.2	2.1	.04	.03
24	1.0	.60	.20	.35	41	.29	1.4	.84	62	1.9	.86	.06
25	.70	.61	.22	.60	31	.29	1.2	.65	11	1.7	.31	.38
26	.34	.55	.27	.90	8.0	.29	1.3	.50	1.9	1.9	.28	.50
27	.60	.61	.28	.60	4.0	.29	1.2	.29	1.1	8.3	.35	.20
28	1.3	.64	.29	.45	3.0	.17	32	.29	.91	24	.41	.16
29	1.0	.70	.29	.39	---	.29	5.3	.39	166	3.6	2.0	.16
30	.84	.75	.30	.35	---	.71	2.3	.22	30	1.9	.23	.08
31	.97	---	.35	.32	---	.39	---	.17	---	1.4	.14	---
TOTAL	9.08	17.60	85.09	10.85	130.78	22.46	468.54	23.81	517.34	674.94	24.73	7.60
MEAN	.29	.59	2.74	.35	4.67	.72	15.6	.77	17.2	21.8	.80	.25
MAX	1.3	.77	45	.90	41	3.0	228	1.7	225	293	4.0	3.0
MIN	.00	.45	.20	.22	.28	.17	.17	.17	.02	.29	.04	.03
CFSM	.02	.05	.21	.03	.36	.06	1.21	.06	1.33	1.69	.06	.02
IN.	.03	.05	.25	.03	.38	.06	1.35	.07	1.49	1.95	.07	.02
AC-FT	18	35	169	22	259	45	929	47	1030	1340	49	15

CAL YR 1980 TOTAL 1220.66 MEAN 3.34 MAX 511 MIN .00 CFSM .26 IN 3.52 AC-FT 2420
WTR YR 1981 TOTAL 1992.80 MEAN 5.46 MAX 293 MIN .00 CFSM .42 IN 5.75 AC-FT 3950

05489500 DES MOINES RIVER AT OTTUMWA, IA

LOCATION.--Lat 41°00'39", long 92°24'40", in SE1/4 NE1/4 sec.25, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, on right bank 15 ft (4 m) downstream from Wabash Railroad Bridge at Ottumwa, 0.4 mi (0.6 km) downstream from Ottumwa powerplant, 6.5 mi (10.5 km) upstream from Village Creek, 9.5 mi (15.3 km) downstream from South Avery Creek, and at mile 94.1 (151.4 km).

DRAINAGE AREA.--13,374 mi² (34,638 km²).

PERIOD OF RECORD.--March 1917 to current year (published as "at Eldon" October 1930 to March 1935). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1917-20. WSP 1308: 1917-23 (M), 1925-27 (M), 1931. WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.00 ft (189.586 m) NGVD. Prior to Sept. 30, 1930, nonrecording gages at Market Street Bridge 1,700 ft (518 m) upstream at datum 0.83 ft (0.25 m) higher. Oct. 1, 1930, to Mar. 31, 1935, nonrecording gage at Eldon 15 mi (24.1 km) downstream at different datum. Apr. 1, 1935, to Oct. 25, 1963, water-stage recorder at site 1,100 ft (335 m) downstream at Vine Street Bridge at datum 0.77 ft (0.23 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 12, 1958, and since Nov. 30, 1960, diurnal fluctuation at low flow caused by powerplant above station. Flow regulated by Lake Red Rock (station 05488100) 48.2 mi (77.6 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--64 years, 5,068 ft³/s (144 m³/s), 5.15 in/yr (131 mm/yr), 3,672,000 acre-ft/yr (4,530 hm³/yr); median of yearly mean discharges, 4,350 ft³/s (123 m³/s), 4.4 in/yr (112 mm/yr), 3,150,000 acre-ft/yr (3,880 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft³/s (3,820 m³/s) June 7, 1947, gage height, 20.2 ft (6.16 m), site and datum then in use; minimum daily, 30 ft³/s (0.85 m³/s) Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft (5.91 m), former site and datum at Vine Street Bridge or about 22 ft (6.71 m) at Market Street Bridge, from information by Corps of Engineers and U.S. Weather Bureau, discharge, about 140,000 ft³/s (3,960 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,200 ft³/s (714 m³/s) July 4, gage height, 9.53 ft (2.905 m); minimum daily, 319 ft³/s (9.03 m³/s) Mar. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2710	1410	810	650	440	2090	454	1560	3770	14000	6780	3950
2	2600	1350	680	660	450	2220	411	1440	3160	13900	6520	4300
3	2800	1400	450	680	480	1620	386	1530	3290	13900	6720	3740
4	2010	1880	596	680	490	1440	681	1450	2970	20900	6790	3470
5	1050	1820	1180	640	480	1520	869	1230	2470	18800	7370	3540
6	1100	1150	980	620	430	1490	1190	1290	2310	17800	7660	3260
7	999	894	1450	760	470	1370	1240	1160	2250	16800	7400	3380
8	878	980	4860	620	560	1170	1510	1140	1780	17000	7290	3450
9	501	771	4500	660	480	1230	2210	1170	2900	17000	6500	3080
10	403	706	3320	720	540	1200	2380	1430	7960	17000	5020	3170
11	423	748	2940	600	560	1150	2430	2090	6840	16800	4420	2570
12	398	950	2900	560	640	1180	4960	2320	3970	16800	4330	1180
13	438	1260	1820	550	620	1030	5300	1990	1960	16800	3610	925
14	410	1570	1650	520	560	927	5640	2000	1300	16800	3170	983
15	402	1820	1360	400	520	824	5750	2440	2350	16900	3110	841
16	450	1690	2220	580	530	732	5910	2210	4580	12600	3910	354
17	656	1070	2200	440	500	771	4430	1460	6310	10500	3510	503
18	922	1200	2300	430	580	770	3510	1650	5300	10300	3290	421
19	880	1200	2200	440	760	751	2360	1640	5780	12000	2830	451
20	1060	1090	2000	450	740	728	2050	1460	6410	10300	2470	417
21	950	838	1610	440	900	738	1870	1570	6390	8440	1880	457
22	908	1120	1600	430	1600	731	1670	1600	6390	5950	1550	370
23	1120	980	1470	420	3200	638	1480	1450	5400	4890	1610	445
24	1160	965	1550	430	4500	575	1480	1540	5350	3720	1740	390
25	1120	771	1600	440	5800	645	1420	1840	6670	3660	1620	753
26	1360	824	1200	460	5250	574	1390	3120	8910	3820	1660	1290
27	1330	824	970	410	2900	468	1460	3750	8750	4420	1610	1100
28	1630	838	720	440	2080	319	1810	4390	8730	5970	1710	1100
29	1820	824	570	450	---	577	1860	4510	11300	7030	2150	1160
30	2000	824	620	440	---	485	1650	4500	13900	7200	2770	1130
31	1690	---	600	450	---	438	---	4460	---	7100	3210	---
TOTAL	36178	33764	52926	16470	37060	30401	69761	65390	158450	369100	124210	52160
MEAN	1167	1125	1707	531	1324	981	2325	2109	5282	11910	4007	1739
MAX	2800	1880	4860	760	5800	2220	5910	4510	13900	20900	7660	4300
MIN	398	706	450	400	430	319	386	1140	1300	3660	1550	354
AC-FT	71760	66970	105000	32670	73510	60300	138400	129700	314300	732100	246400	103500

CAL YR 1980 TOTAL 1338085 MEAN 3656 MAX 23100 MIN 167 AC-FT 2654000
WTR YR 1981 TOTAL 1045890 MEAN 2865 MAX 20900 MIN 319 AC-FT 2075000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2,400	2,290	1,400	1,710	3,150	8,130	11,300	9,280	12,400	6,530	3,600	2,980	5,420
RUNOFF (INCHES)	0.21	0.19	0.12	0.15	0.24	0.70	0.94	0.80	1.03	0.56	0.31	0.25	5.50
STD. DEVIATION	0.22	0.24	0.11	0.18	0.16	0.60	0.83	0.62	0.86	0.40	0.30	0.22	2.89
PERCENT OF ANNUAL	3.8	3.5	2.2	2.7	4.4	13	17	14	19	10	5.6	4.5	----
PRECIP. (INCHES)	2.1	1.4	1.1	1.1	1.0	2.2	2.5	4.1	4.8	3.2	3.2	3.0	30.0

05490500 DES MOINES RIVER AT KEOSAUQUA, IA

LOCATION.--Lat 40°43'40", long 91°57'34", in SE1/4 SW1/4 sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft (3 m) upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi (6.4 km) downstream from Chequest Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--14,038 mi^2 (36,358 km^2).

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1913-20. WSP 1438: Drainage area. WSP 1508: 1903, 1905-6, 1915-18 (M), 1922 (M), 1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 547.36 ft (166.835 m) NGVD. Prior to Dec. 24, 1933, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, same site at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi (146 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Two discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--72 years (1903-5, 1911-81), 3,217 ft^3/s (91.11 m^3/s) 5.32 in/yr (135 mm/yr), 3,984,000 acre-ft/yr (4,910 hm^3/yr); median of yearly mean discharges, 4,930 ft^3/s (140 m^3/s), 4.8 in/yr (122 mm/yr), 3,570,000 acre-ft/yr (4,400 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft^3/s (4,130 m^3/s) June 1, 1903, gage height, 27.85 ft (8.489 m), from floodmark, datum then in use; minimum daily, 40 ft^3/s (1.13 m^3/s) Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft (7 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 44,800 ft^3/s (1,270 m^3/s) July 4, gage height, 22.74 ft (6.931 m); minimum daily, 339 ft^3/s (9.60 m^3/s) Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2890	1800	844	720	490	2450	471	1630	4480	15100	6740	3340
2	2740	1520	823	740	540	2420	459	1510	3550	14300	6440	4140
3	2670	1440	780	750	450	2400	413	1400	3090	14200	6520	4250
4	2750	1490	700	740	490	1920	417	1610	3220	31400	6660	3650
5	1900	2040	926	720	540	1910	587	1500	2940	34400	6620	3570
6	1070	1880	1170	700	520	1920	822	1310	2490	23900	7130	3500
7	1120	1240	2500	720	500	1740	1090	1280	2370	12700	7100	3290
8	989	935	8000	820	560	1540	1130	1320	2490	15800	6910	3720
9	958	1020	6000	740	600	1350	1410	1290	1840	17400	6680	3610
10	586	937	4990	770	540	1380	3160	1350	4020	17200	5940	3120
11	524	694	3640	760	580	1350	3500	1720	7870	15900	5000	3160
12	339	756	3150	700	640	1280	7390	2140	6460	15800	4470	2390
13	391	921	2770	640	700	1300	11000	2390	4120	14200	4310	1250
14	389	1320	1960	500	660	1150	18600	4530	2130	13200	3710	956
15	476	1610	1780	560	600	1020	11700	5140	1810	13900	3270	1040
16	470	1930	1500	470	560	936	8220	3140	4840	15500	3250	949
17	626	1600	2200	660	580	824	5960	2380	5220	11000	4130	549
18	547	1130	2300	560	560	853	4180	2870	5500	9540	3450	468
19	902	1180	2280	520	720	836	3390	3340	5380	13500	3330	445
20	953	1160	1510	500	860	823	2340	2170	5970	12800	2900	507
21	1030	1090	1700	480	1000	791	2010	1750	6250	9940	2610	487
22	578	893	1800	470	1300	796	2070	1720	6770	7400	2080	506
23	907	1110	1700	470	2300	788	2720	1800	6430	5710	1860	455
24	1230	1100	1600	480	4200	707	1940	1680	8400	4400	1680	520
25	1300	1030	1600	480	6200	600	1630	1770	9570	3330	1900	1570
26	1260	799	1500	460	7590	686	1560	1960	9160	3560	1960	3220
27	1530	818	1300	450	4870	597	1560	3100	9140	4560	1690	1860
28	1690	818	1000	470	3050	491	1640	3840	8630	6000	1910	1280
29	1900	834	700	480	---	481	1850	4330	9820	6750	2280	1200
30	2170	824	660	490	---	492	1840	4480	17100	7250	2230	1210
31	2300	---	680	480	---	449	---	4510	---	6960	2760	---
TOTAL	39585	35999	64063	18600	42200	36279	105059	74860	171060	398700	127520	60212
MEAN	1277	1200	2067	600	1507	1170	3502	2415	5702	12860	4114	2007
MAX	2890	2040	8000	820	7590	2450	18600	5140	17100	34400	7130	4250
MIN	339	694	660	450	450	449	413	1280	1810	3330	1680	445
AC-FT	78520	71400	127100	36890	83700	71960	208400	148500	339300	790800	252900	119400

CAL YR 1980 TOTAL 1479265 MEAN 4042 MAX 31600 MIN 318 AC-FT 2934000
WTR YR 1981 TOTAL 1174137 MEAN 3217 MAX 34400 MIN 339 AC-FT 2329000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	2,630	2,490	1,530	1,840	3,430	8,720	12,100	9,890	13,300	6,980	3,880	3,270	5,830
RUNOFF (INCHES)	0.22	0.20	0.13	0.15	0.25	0.72	0.96	0.81	1.06	0.57	0.32	0.26	5.64
STD. DEVIATION	0.22	0.25	0.11	0.18	0.17	0.51	0.83	0.62	0.90	0.41	0.29	0.22	2.93
PERCENT OF ANNUAL	3.9	3.5	2.3	2.7	4.4	13	17	14	19	10	5.7	4.6	----
PRECIP. (INCHES)	2.1	1.4	1.1	1.1	1.0	2.3	2.9	4.1	4.8	3.2	3.2	3.0	30.2

MISSOURI RIVER BASIN

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW1/4 SW1/4 sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 3 ft (0.9 m) upstream from bridge on county highway K30, 0.3 mi (0.5 km) north of Rock Valley and at mile 19.1 (30.7 km).

DRAINAGE AREA.--1,592 mi² (4,123 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.54 ft (372.630 m) NGVD. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft (1.89 m) gage height June 4, 1949, to Aug. 12, 1952, and Aug. 13, 1952, to May 4, 1976, water-stage recorder, at site 3.2 mi (5.1 km) downstream at datum 10.73 ft (3.271 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--33 years, 316 ft³/s (8.949 m³/s), 2.70 in/yr (69 mm/yr), 228,900 acre-ft/yr (282 hm³/yr); median of yearly mean discharges, 250 ft³/s (7.08 m³/s), 2.1 in/yr (53 mm/yr), 181,000 acre-ft/yr (223 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft³/s (1,140 m³/s) Apr. 7, 1969, gage height, 17.32 ft (5.279 m); no flow for many days during winter period in 1959 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft (5.18 m), former site and datum, discharge not determined, from information by State Highway Commission.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,200 ft³/s (90.6 m³/s) June 16, gage height, 11.20 ft (3.414 m) at 0145 hours, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 25 ft³/s (0.71 m³/s) Jan. 30 to Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	73	50	40	25	111	236	90	46	122	74	111
2	70	74	40	40	25	95	218	83	50	111	74	104
3	69	74	40	35	25	87	207	85	52	215	73	99
4	69	72	45	35	25	87	210	98	52	249	75	94
5	70	70	50	30	25	90	206	94	48	171	161	90
6	69	70	55	30	25	91	205	94	45	147	205	86
7	68	70	55	30	25	87	195	90	45	130	188	87
8	67	70	50	30	25	75	179	87	44	113	146	84
9	66	70	50	30	25	74	166	83	42	105	126	81
10	65	69	50	30	25	76	156	79	38	89	111	79
11	65	68	50	30	25	80	150	75	34	81	97	76
12	66	68	50	30	25	80	143	76	34	76	92	73
13	70	69	50	30	25	79	142	82	39	70	91	71
14	66	70	50	30	30	77	136	78	1400	66	115	69
15	65	70	50	30	40	77	133	74	2790	64	135	66
16	76	69	48	30	50	75	130	70	2650	68	187	65
17	82	70	48	30	60	75	126	68	1250	66	220	65
18	82	70	45	30	80	75	122	68	804	63	196	65
19	81	69	40	30	100	72	117	65	581	63	159	65
20	80	68	35	30	150	72	115	61	436	62	136	64
21	79	68	35	30	200	74	115	56	346	54	120	63
22	78	69	35	30	183	74	120	54	289	54	107	62
23	78	74	35	35	140	73	118	56	253	57	101	59
24	78	66	35	40	140	72	119	55	241	59	103	58
25	78	66	35	40	132	72	116	54	210	69	88	60
26	75	60	35	35	120	73	110	53	179	73	86	64
27	74	60	35	30	140	73	105	52	159	76	90	66
28	74	60	35	30	121	77	101	50	145	85	97	63
29	74	60	40	30	---	116	98	50	130	80	103	62
30	75	66	45	25	---	167	92	49	135	76	110	61
31	76	---	45	25	---	225	---	47	---	73	114	---
TOTAL	2256	2052	1361	980	2011	2731	4386	2176	12575	2887	3780	2212
MEAN	72.8	68.4	43.9	31.6	71.8	88.1	146	70.2	419	93.1	122	73.7
MAX	82	74	55	40	200	225	236	98	2790	249	220	111
MIN	65	60	35	25	25	72	92	47	34	54	73	58
CFSM	.05	.04	.03	.02	.05	.06	.09	.04	.26	.06	.08	.05
IN.	.05	.05	.03	.02	.05	.06	.10	.05	.29	.07	.09	.05
AC-FT	4470	4070	2700	1940	3990	5420	8700	4320	24940	5730	7500	4390

CAL YR 1980 TOTAL 123053 MEAN 336 MAX 3980 MIN 35 CFSM .21 IN 2.88 AC-FT 244100
WTR YR 1981 TOTAL 39407 MEAN 108 MAX 2790 MIN 25 CFSM .07 IN .92 AC-FT 78160

06485500 BIG SIOUX RIVER AT AKRON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°49'42", long 96°33'45", in NW1/4 SW1/4 sec.31, T.93 N., R.48 W., Plymouth County, Iowa, Hydrologic Unit 10170203, on left bank at west edge of Akron, 0.6 mi (1.0 km) downstream from bridge on State Highway 48, and 2.3 mi (3.7 km) upstream from Union Creek.

DRAINAGE AREA.--9,030 mi² (23,390 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929 (M), 1931-33 (M), 1936 (M), 1938 (M), 1940 (M). WSP 1389: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,118.90 ft (341.041 m) NGVD. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for the winter period, which are poor. Water-quality data available in reports of Water Resources Data for South Dakota. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--53 years, 848 ft³/s (24.02 m³/s), 614,400 acre-ft/yr (758 hm³/yr); median of yearly mean discharges, 730 ft³/s (20.7 m³/s), 529,000 acre-ft/yr (650 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft³/s (2,290 m³/s) Apr. 9, 1969, gage height, 22.99 ft (7.007 m); minimum daily, 4.0 ft³/s (0.11 m³/s) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,180 ft³/s (90.1 m³/s) June 17, gage height, 10.75 ft (3.277 m), no peak above base of 3,500 ft³/s (99.1 m³/s); minimum daily, 78 ft³/s (2.21 m³/s) Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	207	222	141	98	318	467	243	128	310	199	238
2	181	204	211	140	97	279	477	230	147	292	225	225
3	175	202	190	132	96	267	479	234	174	335	221	214
4	179	197	174	125	96	262	486	246	135	884	210	200
5	179	194	166	119	95	257	482	241	126	766	203	186
6	174	194	158	117	94	255	479	231	124	664	201	177
7	172	197	152	115	93	248	493	230	119	521	282	177
8	171	194	148	114	92	247	465	230	116	419	290	170
9	166	191	143	110	89	240	437	226	118	356	253	162
10	164	187	140	108	85	236	420	212	157	318	220	152
11	162	188	142	105	80	236	397	209	131	290	193	149
12	159	188	146	103	78	238	375	214	126	270	175	140
13	158	186	148	101	80	240	366	221	124	250	164	131
14	164	186	150	99	84	233	350	218	576	227	179	123
15	164	189	153	102	88	237	331	211	2130	211	176	117
16	167	189	157	104	98	229	328	204	2910	195	199	115
17	187	189	158	106	115	229	325	198	2850	187	221	114
18	196	185	160	106	134	224	309	197	1700	231	278	112
19	204	184	150	105	175	221	303	186	1140	407	287	111
20	225	191	130	104	235	216	298	178	900	183	252	110
21	213	191	125	105	295	218	300	169	752	166	221	107
22	203	193	118	106	355	217	309	167	643	159	200	100
23	208	193	117	109	320	214	309	166	559	153	188	99
24	207	191	116	111	305	212	297	153	573	147	180	97
25	203	176	116	114	299	208	297	150	518	149	182	100
26	202	151	117	116	302	205	288	149	449	151	195	131
27	220	160	121	115	334	199	278	145	401	187	191	127
28	214	176	128	110	330	223	271	146	377	193	231	106
29	205	185	134	105	---	286	258	138	368	199	260	107
30	202	204	138	102	---	311	248	133	332	195	256	108
31	207	---	140	100	---	370	---	131	---	183	246	---
TOTAL	5820	5662	4568	3449	4642	7575	10922	6006	18903	9198	6778	4205
MEAN	188	189	147	111	166	244	364	194	630	297	219	140
MAX	225	207	222	141	355	370	493	246	2910	884	290	238
MIN	158	151	116	99	78	199	248	131	116	147	164	97
CFSM	.02	.02	.02	.01	.02	.03	.04	.02	.07	.03	.02	.02
IN.	.02	.02	.02	.01	.02	.03	.04	.02	.08	.04	.03	.02
AC-FT	11540	11230	9060	6840	9210	15030	21660	11910	37490	18240	13440	8340

CAL YR 1980 TOTAL 272598 MEAN 745 MAX 5340 MIN 116 CFSM .08 IN 1.12 AC-FT 540700
WTR YR 1981 TOTAL 87728 MEAN 240 MAX 2910 MIN 78 CFSM .03 IN .36 AC-FT 174000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	309	252	168	103	487	1,840	3,370	1,270	1,820	1,070	614	444	976
RUNOFF (INCHES)	0.04	0.03	0.02	0.01	0.06	0.24	0.42	0.16	0.22	0.14	0.08	0.06	1.47
STD. DEVIATION	0.03	0.02	0.01	0.01	0.07	0.19	0.59	0.12	0.19	0.12	0.08	0.06	0.95
PERCENT OF ANNUAL	2.7	2.0	1.4	0.7	4.1	16	29	11	15	9.5	5.4	4.1	----
PRECIP. (INCHES)	1.4	0.7	0.6	0.4	0.8	1.1	1.9	2.9	4.0	2.9	2.9	2.4	22.0

06486000 MISSOURI RIVER AT SIOUX CITY, IA
(National stream-quality accounting network station)

LOCATION (revised).--Lat 42°29'09", long 96°24'49", in NW1/4 SE1/4 sec.16, T.29 N., R.9 E., sixth principal meridan, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi (3.1 km) downstream from Big Sioux River, and at mile 732.3 (1,78.3 km). Prior to Jan. 31, 1981, at site 227 ft (69 m) downstream.

DRAINAGE AREA.--314,600 mi^2 (814,800 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congress, 2d session, Missouri River. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft (322.168 m) NGVD. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi (2.7 km) of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at site 227 ft (69 m) downstream at datum 19.98 ft (6.090 m) higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft (6.096 m) higher. Oct. 1, 1970 to Jan. 30, 1981, water-stage recorder at site 227 ft (69 m) downstream at at present datum.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weater Service gage-height telemeter at station.

AVERAGE DISCHARGE.--84 years, 32,030 ft^3/s (907.1 m^3/s), 23,210,000 acre-ft/yr (28,600 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft^3/s (12,500 m^3/s) Apr. 14, 1952, gage height, 24.28 ft (7.401 m), datum then in use; minimum, 2,500 ft^3/s (70.8 m^3/s) Dec. 29, 1941; minimum gage height, 9.00 ft (2.743 m) Jan. 8, 1980, based on gage readings at site 14 mi (22.5 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,900 ft^3/s (1,160 m^3/s) June 14, gage height, 20.97 ft (6.392 m); minimum daily, 11,000 ft^3/s (312 m^3/s) Feb. 2; minimum gage height observed 9.55 ft (2.911 m) Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38300	37300	20900	17300	15300	15300	34800	34000	30800	32700	31400	31800
2	38100	38400	19400	16400	11000	15400	33100	34200	32100	32400	31400	31900
3	37800	38500	18500	15900	11500	15500	33200	35200	32400	33700	31700	32100
4	37700	38300	18700	15500	14800	15500	33500	35600	32100	34100	32500	32200
5	37600	38200	18400	15000	16200	15500	33400	34600	31700	33200	31900	32300
6	37900	38400	18400	18400	17200	15500	33100	33800	31600	32000	31600	32200
7	37900	38600	18200	16400	17800	15500	33500	33600	31700	31300	31100	32500
8	37700	38300	17900	15700	15400	15400	33600	33600	31900	31200	31000	31900
9	37300	38100	17800	17600	11500	15400	33500	33800	32000	31100	30900	31700
10	37100	37600	17800	16000	13400	15500	33500	33800	32800	31300	30800	32000
11	37100	37600	17800	15800	13500	15500	34400	33600	33100	31700	30800	32300
12	36700	38400	18800	16500	12800	15600	34800	34500	33500	32100	31000	32700
13	36800	38700	18400	17200	14900	15500	34800	34500	33900	32500	31400	32900
14	37100	40200	18000	16400	17100	13400	34800	33700	36700	33000	32300	32800
15	36900	40100	18100	16000	16900	14500	34400	33400	36300	33000	32400	32700
16	37500	40200	18200	15200	16900	15200	33300	33100	34600	33400	32100	33200
17	37700	40300	18200	14500	17800	15400	33400	33300	31500	33500	32000	33600
18	37200	40500	17400	16000	19000	17100	33300	33600	29200	33900	32200	34200
19	37000	40400	16300	15500	18600	19800	33400	33300	28700	34600	32400	34400
20	37000	40300	15000	14900	15500	22500	33500	32600	29600	34500	32400	34300
21	37100	40000	15500	15200	15400	25100	33400	31200	30100	33900	32400	34400
22	37200	40200	16500	14600	15400	28300	33100	30600	30300	33900	32300	34400
23	37000	40400	18300	14600	15200	31300	33200	30600	30600	33900	32600	34200
24	36800	40100	17600	14700	15000	34200	33400	30200	31200	33800	32600	34300
25	35500	38400	16200	14800	15000	34600	33600	29300	31700	33100	32600	34600
26	36500	35200	17600	15000	15100	34300	33600	29800	31800	32800	32500	34400
27	37100	32600	18500	14800	15300	34300	33600	29900	32000	32500	32500	33800
28	37200	29800	18700	14800	15400	35500	33600	30400	32800	31800	32000	33500
29	36800	27200	18100	14900	---	37000	33500	30700	34000	31100	31400	33400
30	36700	23900	17900	14600	---	36200	33900	30800	33000	30900	31300	34000
31	37000	---	17900	15000	---	36100	---	30800	---	30700	31800	---
TOTAL	1154300	1126200	555000	485200	428900	685900	1010200	1012700	963700	1013600	987300	994700
MEAN	37240	37540	17900	15650	15320	22130	33670	32670	32120	32700	31850	33160
MAX	38300	40500	20900	18400	19000	37000	34800	35600	36700	34600	32600	34600
MIN	36500	23900	15000	14500	11000	13400	33100	29800	28700	30700	30800	31700
AC-FT	2290000	2234000	1101000	962400	850700	1360000	2004000	2009000	1911000	2010000	1958000	1973000

CAL YR 1980 TOTAL 11054000 MEAN 30200 MAX 42000 MIN 13800 AC-FT 21930000
WTR YR 1981 TOTAL 10417700 MEAN 28540 MAX 40500 MIN 11000 AC-FT 20660000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	30,100	22,900	11,400	11,100	12,900	23,400	47,500	34,000	43,800	39,200	32,600	31,800	28,400
RUNOFF (INCHES)	0.11	0.08	0.04	0.04	0.04	0.09	0.17	0.12	0.16	0.14	0.12	0.11	1.23
STD. DEVIATION	0.03	0.03	0.01	0.01	0.02	0.04	0.13	0.04	0.07	0.05	0.02	0.02	0.33
PERCENT OF ANNUAL	8.9	6.5	3.3	3.3	3.3	7.3	14	9.8	13	11	9.8	8.9	----
PRECIP. (INCHES)	1.1	0.6	0.5	0.3	0.6	0.9	1.5	2.3	3.2	2.3	2.3	1.9	17.5

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year. Daily sediment loads October 1954 to September 1971 in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1972 to September 1976, November 1977 to September 1981 (discontinued).
WATER TEMPERATURES: October 1971 to September 1976, November 1977 to September 1981 (discontinued).
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos June 17, 19, 1981; minimum daily, 410 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 28.0°C July 30, 1976 and Aug. 7, 1979; minimum daily, 0.0°C on many days during the winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,620 mg/L Nov. 20, 1972; minimum daily mean, 42 mg/L Dec. 29, 1975.
SEDIMENT LOADS: Maximum daily, 222,000 tons (201,000 tonnes) Nov. 20, 1972; minimum daily, 2,970 tons (2,700 tonnes) Dec. 29, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos June 17,19; minimum daily, 640 micromhos Apr. 30.
WATER TEMPERATURES: Maximum daily, 27.0°C July 14-19, 21-23; minimum daily, 0.0°C on many days during the winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	830	830	840	---	900	760	810	800	850	850	800	800
2	830	830	830	---	900	760	670	800	800	850	800	800
3	840	830	840	---	---	750	800	825	850	800	800	800
4	840	830	850	---	---	725	810	810	850	800	850	800
5	840	830	875	---	---	725	810	820	700	850	800	800
6	830	820	850	---	---	710	825	820	800	850	850	800
7	840	820	850	---	---	700	800	820	850	850	850	800
8	840	820	850	---	---	700	800	860	850	850	850	800
9	840	820	850	---	---	700	825	820	800	850	850	800
10	840	820	840	---	---	710	825	800	850	850	850	800
11	840	830	850	---	---	710	825	820	800	850	850	800
12	840	820	850	---	---	700	825	820	850	850	850	800
13	840	830	850	---	---	725	800	800	850	850	800	800
14	840	830	850	---	800	775	825	800	750	850	800	800
15	840	820	850	---	790	775	825	820	850	800	800	800
16	820	820	850	875	790	740	825	810	800	800	800	800
17	820	830	860	800	825	800	825	810	950	850	800	800
18	820	830	775	850	840	790	825	800	850	850	800	800
19	830	830	900	850	800	800	825	830	950	800	850	800
20	820	830	900	825	800	800	825	810	800	850	850	800
21	820	830	880	825	850	810	825	810	850	850	850	800
22	820	830	880	840	860	810	750	800	800	800	850	800
23	820	830	890	825	860	810	810	830	850	800	850	800
24	820	830	850	825	825	800	810	820	850	850	850	800
25	820	840	---	840	810	800	825	---	800	800	800	800
26	820	840	---	825	810	800	800	800	800	850	800	750
27	820	840	---	850	825	800	800	800	800	850	850	750
28	830	840	---	840	810	740	800	800	750	800	850	700
29	830	840	---	850	---	790	---	800	800	800	850	750
30	830	840	---	850	---	820	640	800	850	800	850	800
31	830	---	---	900	---	800	---	900	---	850	800	---

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	9.0	5.0	---	4.0	6.0	14.0	18.0	19.0	24.0	24.0	22.0
2	15.0	9.0	4.0	---	4.0	6.0	15.0	19.0	20.0	24.0	23.0	23.0
3	14.0	9.0	3.0	---	---	6.0	15.0	19.0	20.0	23.0	24.0	22.0
4	16.0	9.0	3.0	---	---	7.0	15.0	20.0	20.0	23.0	24.0	22.0
5	17.0	9.0	5.0	---	---	7.0	14.0	20.0	22.0	24.0	26.0	23.0
6	17.0	10.0	6.0	---	---	8.0	15.0	21.0	22.0	25.0	25.0	24.0
7	17.0	10.0	5.0	---	---	8.0	15.0	20.0	23.0	25.0	24.0	23.0
8	17.0	10.0	4.0	---	---	8.0	16.0	20.0	23.0	25.0	24.0	22.0
9	17.0	10.0	4.0	---	---	8.0	14.0	20.0	23.0	24.0	25.0	23.0
10	16.0	11.0	4.0	---	---	8.0	14.0	19.0	22.0	24.0	24.0	24.0
11	16.0	11.0	4.0	---	---	8.0	14.0	20.0	22.0	25.0	23.0	24.0
12	15.0	12.0	4.0	---	---	8.0	14.0	20.0	22.0	25.0	24.0	23.0
13	14.0	11.0	5.0	---	---	9.0	15.0	18.0	22.0	26.0	24.0	24.0
14	14.0	11.0	5.0	---	4.0	9.0	14.0	18.0	22.0	27.0	24.0	23.0
15	14.0	11.0	6.0	---	4.0	9.0	14.0	20.0	20.0	27.0	25.0	22.0
16	13.0	11.0	6.0	4.0	5.0	10.0	15.0	20.0	20.0	27.0	25.0	21.0
17	13.0	10.0	6.0	4.0	5.0	11.0	15.0	19.0	19.0	27.0	24.0	20.0
18	14.0	9.0	6.0	4.0	6.0	9.0	16.0	18.0	19.0	27.0	23.0	21.0
19	12.0	8.0	5.0	4.0	5.0	9.0	15.0	19.0	20.0	27.0	23.0	21.0
20	13.0	8.0	4.0	4.0	6.0	9.0	16.0	20.0	19.0	26.0	23.0	21.0
21	12.0	8.0	4.0	5.0	6.0	10.0	15.0	21.0	20.0	27.0	23.0	21.0
22	12.0	7.0	4.0	5.0	6.0	10.0	15.0	21.0	20.0	27.0	24.0	20.0
23	12.0	7.0	4.0	5.0	7.0	11.0	15.0	22.0	20.0	27.0	23.0	20.0
24	10.0	6.0	4.0	6.0	7.0	11.0	15.0	23.0	22.0	25.0	23.0	20.0
25	10.0	6.0	---	5.0	7.0	11.0	16.0	---	23.0	25.0	23.0	20.0
26	10.0	6.0	---	5.0	7.0	12.0	17.0	17.0	23.0	23.0	22.0	19.0
27	10.0	6.0	---	5.0	7.0	12.0	17.0	19.0	24.0	23.0	22.0	18.0
28	9.0	6.0	---	5.0	7.0	13.0	18.0	19.0	24.0	23.0	21.0	18.0
29	9.0	6.0	---	4.0	---	14.0	---	19.0	24.0	22.0	22.0	18.0
30	9.0	5.0	---	4.0	---	13.0	18.0	19.0	24.0	23.0	23.0	20.0
31	9.0	---	---	4.0	---	14.0	---	20.0	---	23.0	22.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 07...	1240	38500	840	8.1	15.0	16	9.2	94	54	<10
NOV 04...	1345	38300	760	8.1	9.0	11	11.0	97	<10	<10
DEC 03...	1045	18700	810	8.2	.0	14	13.2	93	<10	25
JAN 06...	1000	18200	810	8.1	.0	3.1	13.8	99	75	50
FEB 06...	1230	16000	760	8.2	.0	5.7	13.9	99	41	K16
MAR 03...	1145	15600	745	7.9	3.0	10	12.9	99	28	140
APR 07...	1330	33200	800	8.3	10.0	26	10.5	97	120	55
MAY 05...	1200	34700	790	8.6	15.0	17	9.5	96	68	58
JUN 04...	0910	32100	840	8.4	20.5	14	8.4	92	100	K40
JUL 07...	1230	31300	840	8.2	24.6	21	8.0	99	31	K20
AUG 04...	1330	32600	975	8.3	24.0	17	8.0	94	130	39
SEP 03...	1430	31600	810	8.4	21.0	20	10.2	117	31	31

K Results based on colony count outside the acceptable range (non-ideal colony count).

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 07...	250	93	60	25	80	40	2.2	5.4	160	230
NOV 04...	250	79	60	24	76	39	2.1	5.2	170	230
DEC 03...	250	76	59	24	83	42	2.3	5.4	--	240
JAN 06...	250	81	61	24	80	40	2.2	5.1	--	250
FEB 06...	250	140	62	24	74	38	2.0	4.9	--	240
MAR 03...	240	--	59	23	69	38	1.9	4.4	--	220
APR 07...	250	--	62	24	78	40	2.1	5.1	--	250
MAY 05...	260	--	63	25	83	40	2.2	4.8	--	250
JUN 04...	260	--	63	26	80	39	2.1	5.0	--	250
JUL 07...	270	--	64	26	82	40	2.2	5.1	--	260
AUG 04...	260	--	63	25	81	40	2.4	5.4	--	260
SEP 03...	250	--	57	25	78	40	2.4	5.2	--	260

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 07...	13	.5	6.9	552	517	.75	57400	.00	.020	.02
NOV 04...	12	.5	7.3	541	517	.74	55900	.00	.010	.01
DEC 03...	12	.4	7.3	559	534	.76	28200	.01	.140	.17
JAN 06...	15	.5	7.7	562	546	.76	27600	.10	.070	.08
FEB 06...	11	.4	8.5	530	491	.72	22900	.04	.030	.04
MAR 03...	12	.4	8.2	476	487	.65	20000	.12	.080	--
APR 07...	11	.5	7.0	521	534	.71	46700	.03	.030	--
MAY 05...	17	.4	5.4	547	545	.74	51200	.05	.090	--
JUN 04...	9.8	.5	6.1	553	537	.75	47900	.02	.050	--
JUL 07...	12	.5	6.5	564	553	.77	47700	.10	.060	--
AUG 04...	11	.5	6.5	553	549	.75	48700	.00	.110	--
SEP 03...	13	.5	7.2	557	542	.76	47500	.02	.040	--

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)
OCT 07...	.65	.67	.12	.55	.67	3.0	.300	.92	.020
NOV 04...	.54	.55	.10	.45	.55	2.4	.140	.43	.020
DEC 03...	.59	.73	.36	.37	.74	3.3	.060	.18	.030
JAN 06...	.69	.76	.10	.66	.86	3.8	.090	.28	.040
FEB 06...	.88	.91	.50	.41	.95	4.2	.080	.25	.060
MAR 03...	.89	.97	.28	.69	1.1	4.8	.070	.21	.060
APR 07...	.56	.59	.14	.45	.62	2.7	.120	.37	.020
MAY 05...	.41	.50	.00	.57	.55	2.4	.200	.61	.150
JUN 04...	.56	.61	.00	1.1	.63	2.8	.070	.21	.010
JUL 07...	.75	.81	.12	.69	.91	4.0	.070	.21	.040
AUG 04...	.78	.89	.44	.45	.89	3.9	.060	.18	.010
SEP 03...	.67	.71	.02	.69	.73	3.2	.080	.25	.020

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
OCT								
07...	1240	--	--	--	--	5.2	--	--
NOV								
04...	1345	3900	409	42300	10	--	5.1	--
DEC								
03...	1045	--	74	3740	55	5.0	--	--
JAN								
06...	1000	--	--	--	--	9.7	--	--
FEB								
06...	1230	--	--	--	--	--	9.9	.1
MAR								
03...	1145	--	224	9440	12	8.1	--	--
APR								
07...	1330	--	520	46600	13	9.8	--	--
MAY								
05...	1200	6600	504	47200	11	--	4.2	.3
JUN								
04...	0910	3000	184	15900	20	4.5	--	--
JUL								
07...	1230	--	237	20000	18	4.0	--	--
16...	1115	1300	--	--	--	--	--	--
AUG								
04...	1330	30000	313	27600	16	--	3.0	.6
SEP								
03...	1430	5200	--	--	--	6.7	--	--

	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
NOV										
04...	1345	3	2	--	--	50	--	--	3	--
FEB										
06...	1230	2	1	100	50	50	1	0	2	10
MAY										
05...	1200	2	1	100	50	50	16	8	8	0
AUG										
04...	1330	4	2	100	50	50	12	9	3	10

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV										
04...	--	0	--	<3	--	--	8	--	--	<10
FEB										
06...	10	0	0	<3	7	3	4	630	590	40
MAY										
05...	0	0	0	<3	18	12	6	2200	2200	10
AUG										
04...	10	0	2	<3	26	19	7	2900	--	<10

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
NOV									
04...	--	--	10	--	--	4	.1	.1	.0
FEB									
06...	5	4	1	40	30	10	.5	.5	.0
MAY									
05...	9	4	5	110	100	6	.2	.2	.0
AUG									
04...	9	9	0	160	160	3	.2	.2	.0

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-. PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 04...	--	--	4	1	0	1	--	--	5
FEB 06...	5	3	2	2	0	2	30	0	30
MAY 05...	6	1	5	1	0	2	50	40	10
AUG 04...	6	5	1	1	0	2	160	--	<3

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI-AZINON, TOTAL (UG/L) (39570)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)
NOV 04...	1245	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	MALA-THION, TOTAL (UG/L) (39530)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METHYL PARA-THION, TOTAL (UG/L) (39600)	METHYL TRI-THION, TOTAL (UG/L) (39790)	PARA-THION, TOTAL (UG/L) (39540)	TOX-APHENE, TOTAL (UG/L) (39400)	TOTAL TRI-THION (UG/L) (39786)
NOV 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	NOV 4,80	MAY 5,81	JUN 4,81	JUL 16,81	AUG 4,81	SEP 3,81
TIME	0000	1200	0910	1115	1330	1430
TOTAL CELLS/ML	3900	6600	3000	1300	30000	5200
DIVERSITY: DIVISION	0.2	1.3	1.6	1.5	1.5	1.3
.CLASS	0.2	1.3	1.6	1.5	1.5	1.3
..ORDER	0.4	1.7	2.3	2.0	1.9	1.7
...FAMILY	0.4	2.1	2.9	2.7	2.8	2.5
....GENUS	1.8	2.6	3.7	3.1	3.8	2.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-	29	1
...COELASTRACEAE												
....COELASTRUM	--	-	--	-	110	4	130	10	2100	7	87	2
...MICRACTINIACEAE												
....MICRACTINIUM	--	-	130	2	--	-	13	1	--	-	450	9
...OOCYSTACEAE												
....ANKISTRODESMUS	34	1	58	1	170	5	39	3	1700	6	58	1
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-	*	0	--	-
....DICTYOSPHAERIUM	--	-	--	-	170	6	--	-	5800#	18	400	8
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-	140	3
....KIRCHNERIELLA	--	-	--	-	130	4	--	-	650	2	--	-
....OOCYSTIS	--	-	--	-	220	7	13	1	1000	3	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	390	1	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	260	1	58	1
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	920#	18
....CRUCIGENIA	--	-	--	-	--	-	--	-	1600	5	--	-
....SCENEDESMUS	67	2	230	3	110	4	180	14	1800	6	230	4
....TETRASTRUM	--	-	--	-	56	2	260#	20	520	2	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	120	2	70	2	13	1	390	1	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	2000#	50	260	4	130	4	77	6	3900	13	160	3
....MELOSIRA	670#	17	--	-	280	9	--	-	1800	6	58	1
....STEPHANODISCUS	1000#	26	--	-	*	0	--	-	--	-	--	-
..PENNALES												
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	1600#	24	240	8	--	-	--	-	--	-
....FRAGILARIA	--	-	1100#	17	660#	22	--	-	--	-	--	-
....SYNEDRA	--	-	58	1	--	-	--	-	*	0	--	-
...NAVICULACEAE												
....NAVICULA	--	-	--	-	--	-	13	1	*	0	29	1
...NITZSCHIACEAE												
....NITZSCHIA	170	4	100	2	130	4	26	2	1400	5	43	1
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	42	1	39	3	--	-	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	13	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	--	-	520	2	--	-
....ANACYSTIS	--	-	190	3	210	7	190	15	1000	3	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-	1900#	38
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	310#	24	--	-	650	12
....ANABAENOPSIS	--	-	2600#	38	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	1000	3	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	260	4	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	280	9	--	-	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	4200	14	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	--	-	--	-	28	1	--	-	--	-	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE1/4 NE1/4 sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank at downstream side of Chicago and Northwestern Railway Company bridge at east edge of Alton, 34.3 mi (55.2 km) upstream from West Branch Floyd River, and at mile 58.1 (93.5 km).

DRAINAGE AREA.--265 mi^2 (686 km^2).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft (386.959 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--26 years, 50.1 ft^3/s (1.419 m^3/s), 2.57 in/yr (65 mm/yr), 36,300 acre-ft/yr (44.8 hm^3/yr); median of yearly mean discharges, 44 ft^3/s (1.25 m^3/s), 2.3 in/yr (58 mm/yr), 31,900 acre-ft/yr (39.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft^3/s (396 m^3/s) Mar. 23, 1979, gage height, 18.4 ft (5.61 m); no flow at times in 1956, 1958-59, 1965, 1968, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft^3/s (1,290 m^3/s), from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,440 ft^3/s (40.8 m^3/s) June 15, gage height, 14.17 ft (4.319 m), from floodmark, at 1900 hours, no other peak above base of 800 ft^3/s (22.7 m^3/s), minimum daily, 1.9 ft^3/s (0.054 m^3/s) Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	21	12	8.0	4.0	21	75	19	17	87	25	20
2	18	18	7.0	7.0	4.0	16	65	18	33	71	30	17
3	17	15	8.0	7.0	4.0	14	58	21	73	273	26	15
4	17	16	9.0	6.0	4.0	17	55	29	50	325	22	13
5	17	15	10	6.0	4.0	18	53	32	36	191	20	12
6	17	15	9.0	6.0	4.0	16	46	29	30	145	21	10
7	17	14	8.0	5.0	4.0	14	42	26	26	122	22	11
8	16	14	8.0	5.0	4.0	14	39	25	25	106	17	12
9	16	16	8.0	5.0	4.0	15	36	25	30	91	15	9.4
10	16	15	8.0	5.0	4.0	15	34	24	39	77	13	8.2
11	15	15	8.0	5.0	4.0	13	31	22	38	70	12	6.5
12	15	15	8.0	5.0	4.0	13	29	22	36	65	10	5.7
13	15	15	9.0	5.0	4.5	13	30	25	37	60	13	5.4
14	15	16	9.0	5.0	5.0	13	29	26	602	53	21	3.9
15	16	16	9.0	5.0	6.0	13	27	25	1240	48	21	3.7
16	17	15	9.0	5.0	7.0	13	26	24	714	45	33	3.8
17	17	16	9.0	5.0	10	13	25	23	251	40	25	3.7
18	16	13	8.0	6.0	20	12	25	22	180	35	19	3.8
19	15	14	7.0	6.0	40	11	25	21	142	34	16	4.0
20	16	17	7.0	6.0	50	12	24	19	122	35	14	3.4
21	15	15	7.0	6.8	41	14	24	18	107	31	11	2.1
22	15	16	6.5	6.8	35	14	26	17	96	28	9.7	1.9
23	16	16	6.0	6.8	46	13	26	19	84	26	9.0	1.9
24	16	15	6.0	6.8	29	13	24	22	84	25	18	2.4
25	17	13	6.0	6.8	22	14	24	23	71	24	18	4.8
26	17	12	6.0	6.5	20	14	23	23	62	22	14	8.3
27	18	13	6.0	6.0	25	14	22	22	56	22	16	8.4
28	17	13	6.0	5.0	32	21	22	20	57	23	28	7.1
29	18	14	6.0	5.0	---	62	22	21	221	23	27	5.1
30	18	15	7.0	4.5	---	104	20	20	119	22	25	5.5
31	18	---	8.0	4.0	---	87	---	18	---	20	22	---
TOTAL	512	453	240.5	178.0	440.5	656	1007	700	4678	2239	592.7	218.7
MEAN	16.5	15.1	7.76	5.74	15.7	21.2	33.6	22.6	156	72.2	19.1	7.29
MAX	19	21	12	8.0	50	104	75	32	1240	325	33	20
MIN	15	12	6.0	4.0	4.0	11	20	17	17	20	9.0	1.9
CFSM	.06	.06	.03	.02	.06	.08	.13	.09	.59	.27	.07	.03
IN.	.07	.06	.03	.02	.06	.09	.14	.10	.66	.31	.08	.03
AC-FT	1020	899	477	353	874	1310	2000	1390	9280	4440	1180	434

CAL YR 1980 TOTAL 23379.5 MEAN 63.9 MAX 965 MIN 6.0 CFSM .24 IN 3.28 AC-FT 46370
WTR YR 1981 TOTAL 11917.4 MEAN 32.7 MAX 1240 MIN 1.9 CFSM .12 IN 1.67 AC-FT 23640

06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION.--Lat 42°55'15", long 96°10'30", in NE1/4 NE1/4 sec. 32, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, on left bank near wingwall at downstream side of bridge on county highway B62, 0.2 mi (0.3 km) west of U.S. Highway 75, 0.8 mi (1.3 km) downstream from Orange City slough, 2.2 mi (3.5 km) northeast of Struble, 21.4 mi (34.4 km) upstream from Floyd River, and at mile 45.2 (72.7 km), above mouth of Floyd River.

DRAINAGE AREA.--181 mi² (469 km²).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,239.40 ft (377.769 m) NGVD (State Highway Commission bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 31.7 ft³/s (0.898 m³/s), 2.38 in/yr (60 mm/yr), 22,970 acre-ft/yr (28.3 hm³/yr); median of yearly mean discharges, 27 ft³/s (0.76 m³/s), 2.0 in/yr (51 mm/yr), 19,600 acre-ft/yr (24.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,060 ft³/s (228 m³/s) Mar. 28, 1962, gage height, 15.63 ft (4.764 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 14	0800	*1,310	37.1	*11.10	3.383	July 4	0515	1,150	32.6	10.56	3.219

Minimum daily discharge, 3.0 ft³/s (0.085 m³/s) Jan. 30 to Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	11	8.0	7.0	3.0	9.0	41	9.0	5.9	38	24	13
2	14	11	7.0	6.0	3.0	8.0	35	9.1	49	32	25	12
3	14	11	6.0	6.0	3.0	8.0	32	10	51	283	21	11
4	14	11	7.0	5.0	3.0	9.0	32	15	32	805	19	11
5	13	10	8.0	5.0	3.0	9.0	32	13	24	207	19	10
6	13	11	8.0	5.0	3.0	8.0	30	11	20	138	18	10
7	13	10	8.0	4.0	3.0	8.0	27	10	18	112	15	11
8	12	10	7.0	4.0	3.0	7.0	24	10	17	96	14	11
9	12	9.8	7.0	4.0	3.0	7.0	23	10	47	84	13	10
10	11	9.7	7.0	4.0	3.0	6.5	21	9.6	44	75	12	9.8
11	11	9.6	7.0	4.0	3.0	6.4	19	9.0	33	70	12	9.3
12	12	9.7	7.0	4.0	3.0	5.7	18	9.7	30	63	12	9.0
13	11	9.7	8.0	4.0	3.5	5.8	18	13	32	57	13	9.1
14	11	9.4	8.0	4.0	4.0	6.3	17	11	817	53	17	8.4
15	11	11	8.0	4.0	5.0	5.7	17	10	496	48	14	8.2
16	14	10	7.0	4.0	7.0	5.7	17	9.3	119	44	13	8.5
17	16	9.4	7.0	4.0	10	5.5	16	8.9	92	40	11	8.3
18	14	10	6.0	5.0	15	5.3	15	8.9	76	50	11	8.1
19	13	10	5.0	5.0	20	5.5	14	8.1	65	53	9.7	8.3
20	12	10	5.0	5.0	30	5.3	14	7.5	59	36	9.9	8.4
21	11	9.7	5.0	6.0	25	5.8	14	7.4	55	32	9.7	8.5
22	11	9.4	5.0	6.0	20	6.1	14	7.1	50	29	9.4	8.2
23	12	9.0	5.0	6.0	17	5.5	13	8.2	45	27	9.5	8.0
24	12	9.0	5.0	7.0	15	5.5	12	7.4	76	24	11	8.2
25	11	9.0	5.0	7.0	13	5.4	12	7.1	46	22	12	8.8
26	11	9.0	5.0	5.0	12	5.9	12	6.7	39	20	11	10
27	12	9.0	5.0	4.0	11	6.2	12	6.7	35	20	11	9.8
28	11	9.0	5.0	3.5	10	8.5	10	6.9	34	22	16	9.0
29	11	9.7	5.0	3.5	---	66	11	6.3	64	20	14	9.0
30	11	9.4	6.0	3.0	---	65	9.4	6.0	48	19	13	9.7
31	11	---	7.0	3.0	---	49	---	5.9	---	18	14	---
TOTAL	379	295.5	199.0	147.0	253.5	365.6	581.4	277.8	2618.9	2637	433.2	283.6
MEAN	12.2	9.85	6.42	4.74	9.05	11.8	19.4	8.96	87.3	85.1	14.0	9.45
MAX	16	11	8.0	7.0	30	66	41	15	817	805	25	13
MIN	11	9.0	5.0	3.0	3.0	5.3	9.4	5.9	5.9	18	9.4	8.0
CFSM	.07	.05	.04	.03	.05	.07	.11	.05	.48	.47	.08	.05
IN.	.08	.06	.04	.03	.05	.08	.12	.06	.54	.54	.09	.06
AC-FT	752	586	395	292	503	725	1150	551	5190	5230	859	563

CAL YR 1980 TOTAL 13614.4 MEAN 37.2 MAX 1070 MIN 5.0 CFSM .21 IN 2.80 AC-FT 27000
WTR YR 1981 TOTAL 8471.5 MEAN 23.2 MAX 817 MIN 3.0 CFSM .13 IN 1.74 AC-FT 16800

06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 96°18'43", in SE1/4 SE1/4 sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on right bank at downstream side of bridge on county highway C70, 0.2 mi (0.3 km) east of James, 14.3 mi (23.0 km) downstream from West Branch Floyd River, and at mile 9.5 (15.3 km).

DRAINAGE AREA.--882 mi^2 (2,284 km^2).

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft (333.021 m) NGVD. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--46 years (water years 1936-81), 181 ft^3/s (5.126 m^3/s), 2.79 in/yr (71 mm/yr), 131,100 acre-ft/yr (163 hm^3/yr); median of yearly mean discharges, 150 ft^3/s (4.25 m^3/s), 2.3 in/yr (58 mm/yr), 109,000 acre-ft/yr (134 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft^3/s (2,020 m^3/s) June 8, 1953, gage height, 25.3 ft (7.71 m), from floodmarks, datum then in use, from rating curve extended above 16,000 ft^3/s (453 m^3/s) on basis of contracted-opening and flow-over-embankment measurement of peak flow; minimum daily, 0.90 ft^3/s (0.025 m^3/s) Jan. 10-22, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
June 14	1500	*3,400	96.3	*16.77	5.111	July 4	1400	2,780	78.7	15.94	4.859

Minimum daily discharge, 24 ft^3/s (0.68 m^3/s) Jan. 31 to Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	71	50	40	24	80	242	67	50	346	104	75
2	84	69	35	35	24	79	209	65	56	255	128	70
3	83	71	35	30	24	67	181	65	107	357	123	66
4	82	67	40	30	24	66	168	91	140	2160	111	62
5	82	66	50	30	24	66	159	98	129	1300	102	59
6	80	74	45	30	24	65	149	95	99	749	93	57
7	79	69	40	30	24	63	139	91	82	567	85	62
8	76	67	40	30	24	57	131	85	71	463	80	57
9	74	63	40	30	24	56	122	81	65	388	80	54
10	74	62	40	30	24	57	112	77	147	341	73	51
11	71	62	40	30	24	56	107	74	166	300	70	49
12	70	62	40	30	24	56	103	71	299	258	67	46
13	71	62	45	30	27	55	103	79	987	242	70	44
14	72	62	45	30	30	55	105	85	1980	216	93	42
15	72	62	50	30	40	55	99	83	2350	198	92	42
16	74	64	50	30	60	55	94	78	1840	181	81	43
17	85	63	50	30	100	55	87	75	1120	170	75	42
18	82	64	45	35	150	53	87	75	566	161	79	43
19	80	70	35	35	200	53	84	72	425	305	74	41
20	77	70	35	35	168	53	85	66	348	207	70	41
21	74	67	30	40	157	55	84	62	300	171	67	38
22	72	66	30	40	131	55	89	60	271	152	65	36
23	71	64	30	40	109	55	90	75	241	138	62	35
24	69	61	30	40	96	55	89	69	228	127	61	35
25	71	59	30	40	87	53	84	60	243	119	62	38
26	71	50	30	35	85	53	82	60	196	111	68	41
27	71	55	30	30	82	53	77	60	172	106	69	42
28	72	55	30	30	82	60	72	59	166	112	70	40
29	72	60	30	30	---	133	71	58	529	111	80	39
30	72	67	35	27	---	250	69	55	718	109	83	39
31	72	---	40	24	---	281	---	53	---	104	79	---
TOTAL	2341	1926	1195	1006	1892	2305	3373	2244	14091	10534	2516	1429
MEAN	75.5	64.2	38.5	32.5	67.6	74.4	112	72.4	470	340	81.2	47.6
MAX	86	74	50	40	200	281	242	98	2350	2160	128	75
MIN	69	50	30	24	24	53	69	53	50	104	61	35
CFSM	.09	.07	.04	.04	.08	.08	.13	.08	.53	.39	.09	.05
IN.	.10	.08	.05	.04	.08	.10	.14	.09	.59	.44	.11	.06
AC-FT	4640	3820	2370	2000	3750	4570	6690	4450	27950	20890	4990	2830

CAL YR 1980 TOTAL 73652 MEAN 201 MAX 2730 MIN 30 CFSM .23 IN 3.11 AC-FT 146100
WTR YR 1981 TOTAL 44852 MEAN 123 MAX 2350 MIN 24 CFSM .14 IN 1.89 AC-FT 88960

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	8.4	48	35	24	151	477	383	205	396	205	128	122	186
RUNOFF (INCHES)	0.08	0.06	0.05	0.03	0.18	0.62	0.48	0.27	0.50	0.27	0.17	0.15	2.86
STD. DEVIATION	0.11	0.07	0.05	0.04	0.27	0.62	0.74	0.27	0.59	0.31	0.28	0.31	2.28
PERCENT OF ANNUAL	2.9	2.1	1.8	1.1	6.4	22	17	9.6	18	9.6	6.1	5.4	----
PRECIP. (INCHES)	1.7	0.8	0.8	0.6	0.9	1.6	2.2	3.7	4.6	3.2	3.4	3.2	26.7

06601200 MISSOURI RIVER AT DECATUR, NB

WATER-QUALITY RECORDS

LOCATION.--Lat 42°00'26", long 96°14'29", NE1/4 SW1/4 sec.26, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, at bridge on State Highway 175 and 51 at Decatur, Nebraska, 6.0 mi (9.7 km) west of Onawa, Iowa and at mile 691.0 (1,111.8 km).

DRAINAGE AREA.--316,160 mi² (818,850 km²).

PERIOD OF RECORD.--Water years 1974 to September 1981 (discontinued).

REMARKS.--Water discharge estimated on basis of records at station (No. 06486000) 41.3 mi (66.4 km) upstream. No significant inflow between gaging station and sampling site. Records of daily gage heights available in subdistrict office, USGS, Council Bluffs, Iowa.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
FEB 19...	1400	18000	790	7.7	2.0	12.8	97	6	K4000	506	.69	24600
MAR 10...	1100	15000	690	7.8	5.0	12.9	101	14	K210	422	.57	--
APR 08...	1100	32600	830	8.1	12.0	9.8	91	23	550	527	.72	46400
MAY 06...	1130	33300	800	8.2	16.0	9.0	93	16	110	548	.75	49300
JUN 05...	1130	32000	825	7.8	22.0	--	94	18	--	543	.74	--
JUL 08...	1045	32300	900	7.6	25.5	7.6	95	96	900	562	.76	49000
AUG 05...	1130	31900	808	8.3	25.0	7.9	94	30	130	541	.74	46600
SEP 09...	1100	31600	850	8.4	22.0	10.1	115	27	32	553	.75	47200

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
FEB 19...	51	.11	.150	1.7	1.80	1.9	8.5	.080	10	0	270	.00
MAR 10...	24	--	--	--	--	--	--	--	5	0	60	--
APR 08...	65	.09	.040	.71	.75	.84	3.7	.100	9	0	40	.04
MAY 06...	43	.08	.110	.63	.74	.82	3.6	.210	6	0	20	.11
JUN 05...	23	.00	.070	.55	.62	.62	2.7	.090	4	0	20	.08
JUL 08...	40	.38	.040	.69	.73	1.1	4.8	.100	6	0	30	.06
AUG 05...	34	.01	.100	1.0	1.10	1.1	4.9	.060	4	0	30	.05
SEP 09...	66	--	--	--	--	--	--	--	4	0	30	>.01

06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in SW1/4 sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi (1.6 km) east of Hornick, 9.2 mi (14.8 km) upstream from Wolf Creek, and 13.5 mi (21.7 km) north of Onawa.

DRAINAGE AREA.--403 mi² (1,044 km²).

PERIOD OF RECORD.--April 1939 to September 1969 (published as "at Holly Springs"), July 1974 to current year.

REVISED RECORDS.--WSP 1240: 1943, 1945 (M). WSP 1310: 1941 (M) 1944-46 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft (318.766 m) NGVD. Prior to June 16, 1959, nonrecording gage at site 3.0 mi (4.8 km) upstream and June 16, 1959 to Sept. 30, 1969, recording gage at site 2.2 mi (3.5 km) upstream at datum 7.0 ft (2.134 m) higher.

REMARKS.--Records good except those for winter period and period of no gage-height record Mar. 1 to Apr. 8, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux Riiver at Holly Springs 5.5 mi (8.8 km) south, thence southeast 6.5 mi (10.5 km) to a point 1.2 mi (1.9 km) west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels Little Sioux River and becomes known as Monona-Harrison ditch. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--37 years (1940-69, 1975-81), 93.4 ft³/s (2.645 m³/s), 3.15 in/yr (80 mm/yr), 67,670 acre-ft/yr (83.5 hm³/yr); median of yearly mean discharges, 84 ft³/s (2.38 m³/s), 2.8 in/yr (71 hm/yr), 60,900 acre-ft/yr (75.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Mar. 28, 1962, gage height, 22.46 ft (6.846 m), site and datum then in use; maximum gage height, 25.2 ft (7.681 m), site and datum then in use, Mar. 30, 1960, from floodmark; minimum daily discharge, 0.2 ft³/s (0.006 m³/s) July 30, Aug. 17, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,440 ft³/s (69.1 m³/s) June 15, gage height, 14.55 ft (4.435 m) at 0015 hours, no other peak above base of 1,800 ft³/s (51.0 m³/s); minimum daily, 10 ft³/s (0.28 m³/s) Jan. 31 to Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	32	25	15	10	32	48	18	24	35	36	18
2	26	32	20	15	10	30	42	18	27	29	34	18
3	26	30	16	15	10	29	40	18	24	44	33	17
4	27	30	18	15	10	29	38	26	29	450	32	17
5	28	30	20	15	10	30	35	32	26	425	31	17
6	27	31	20	15	10	28	33	29	22	172	30	17
7	27	31	18	15	10	26	31	26	21	117	29	17
8	26	30	18	15	10	25	29	23	20	91	28	17
9	26	31	18	15	10	27	28	21	19	74	28	16
10	25	29	18	15	10	27	27	21	20	65	27	15
11	23	28	20	15	10	26	26	21	35	59	26	15
12	21	29	20	15	10	26	25	21	37	52	26	14
13	23	30	20	15	10	25	24	24	1300	48	26	14
14	23	30	20	15	12	24	23	26	1530	44	28	12
15	24	30	20	15	15	23	24	26	1340	41	28	13
16	29	30	20	15	20	22	23	23	229	39	26	13
17	34	29	20	15	40	24	22	22	108	38	24	13
18	33	26	18	16	100	23	23	23	74	37	23	14
19	31	26	15	17	150	22	23	24	61	69	23	14
20	29	31	15	18	75	23	23	22	53	53	21	14
21	28	32	15	19	62	25	24	21	47	44	21	14
22	27	32	15	20	53	27	27	21	43	41	19	13
23	30	33	15	20	45	26	28	514	40	35	20	13
24	31	28	15	20	40	26	26	400	40	35	21	14
25	30	28	15	20	38	26	24	70	38	37	22	16
26	29	23	15	20	37	26	21	42	35	30	22	16
27	30	25	15	18	35	28	20	35	32	31	20	15
28	32	25	15	16	34	35	18	31	31	36	21	14
29	31	25	15	14	---	48	19	29	67	36	21	14
30	32	28	15	12	---	74	18	26	45	35	20	14
31	32	---	15	10	---	60	---	24	---	32	19	---
TOTAL	867	874	544	495	886	922	812	1677	5417	2374	785	448
MEAN	28.0	29.1	17.5	16.0	31.6	29.7	27.1	54.1	181	76.6	25.3	14.9
MAX	34	33	25	20	150	74	48	514	1530	450	36	18
MIN	21	23	15	10	10	22	18	18	19	29	19	12
CFSM	.07	.07	.04	.04	.08	.07	.07	.13	.45	.19	.06	.04
IN.	.08	.08	.05	.05	.08	.09	.07	.15	.50	.22	.07	.04
AC-FT	1720	1730	1080	982	1760	1830	1610	3330	10740	4710	1560	889

CAL YR 1980 TOTAL 28878 MEAN 78.9 MAX 940 MIN 15 CFSM .20 IN 2.67 AC-FT 57280
WTR YR 1981 TOTAL 16101 MEAN 44.1 MAX 1530 MIN 10 CFSM .11 IN 1.49 AC-FT 31940

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 NE1/4 sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left pier at downstream side of bridge on county highway E54, 1.0 mi (1.6 km) west of gaging station on Little Sioux River near Turin, 4 mi (6.4 km) southwest of Turin, 5.2 mi (8.4 km) northeast of Blencoe, and 12.5 mi (20.1 km) upstream from mouth.

DRAINAGE AREA.--900 mi² (2,331 km²).

PERIOD OF RECORD.--April 1939 to current year. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi (2.4 km) upstream. Prior to May 1942, published as "near Blencoe".

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft (309.372 m) NGVD (Corps of Engineers bench mark). Prior to May 7, 1942, nonrecording gage at site 4.8 mi (7.7 km) downstream at datum 5.40 ft (1.646 m) lower. May 7, 1942, to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Monona-Harrison ditch is a dug channel and and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi (2.4 km) upstream from the mouth of the Little Sioux River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 203 ft³/s (5.749 m³/s), 3.06 in/yr (78 mm/yr), 147,100 acre-ft/yr (181 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft³/s (564 m³/s) Feb. 19, 1971, gage height, 23.03 ft (7.020 m), datum then in use; minimum daily, 8.5 ft³/s (0.24 m³/s) Jan. 3-11, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,910 ft³/s (54.1 m³/s) June 15, gage height, 11.91 ft (3.630 m), no peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 20 ft³/s (0.57 m³/s) Feb. 2-12.

CORRECTIONS.--The maximum discharge as published in the 1978 report occurred on March 19 instead of May. The peak discharge table following the extremes paragraph was erroneously published and should be disregarded.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	67	60	40	25	62	93	41	48	104	45	33
2	54	66	50	40	20	59	82	45	53	71	87	32
3	51	66	55	30	20	55	82	49	60	71	53	32
4	53	63	55	25	20	57	71	54	54	547	49	31
5	58	60	45	30	20	58	67	80	66	520	55	32
6	58	61	50	30	20	54	69	67	51	245	51	33
7	55	62	50	25	20	51	72	56	48	155	46	34
8	56	61	45	25	20	47	63	53	44	134	39	33
9	54	58	40	25	20	53	62	48	43	114	36	36
10	52	56	35	25	20	53	67	45	42	101	35	34
11	48	58	30	25	20	50	64	46	42	99	35	30
12	47	60	30	30	20	50	65	47	78	83	35	28
13	52	60	35	35	25	48	65	50	331	75	36	27
14	54	59	35	40	30	47	60	57	1280	69	40	26
15	53	59	35	40	40	44	61	57	957	62	44	25
16	66	58	40	35	70	42	64	54	412	56	43	26
17	85	59	45	35	100	46	63	54	202	52	39	26
18	76	51	45	40	175	46	58	52	136	49	38	27
19	64	54	30	40	161	43	56	54	109	53	37	28
20	60	51	30	43	142	44	52	51	96	92	36	28
21	60	55	30	52	118	48	53	49	89	53	36	30
22	58	60	30	44	106	53	58	49	83	58	37	29
23	60	59	30	39	79	50	60	113	79	48	39	30
24	61	48	30	40	81	50	58	487	75	43	40	31
25	62	37	30	43	78	51	54	186	86	50	46	35
26	60	40	30	44	74	51	51	94	73	67	44	37
27	62	53	30	44	68	54	49	72	62	47	46	34
28	66	54	35	35	66	61	47	64	60	48	44	34
29	67	59	40	35	---	93	43	59	232	52	45	33
30	67	67	45	30	---	147	41	53	195	49	40	31
31	67	---	40	30	---	123	---	51	---	47	36	---
TOTAL	1843	1719	1210	1094	1658	1790	1850	2337	5184	3324	1331	925
MEAN	59.5	57.3	39.0	35.3	59.2	57.7	61.7	75.4	173	107	42.9	30.8
MAX	85	67	60	52	175	147	93	487	1280	547	87	37
MIN	47	37	30	25	20	42	41	41	42	43	35	25
CFSM	.07	.06	.04	.04	.07	.06	.07	.08	.19	.12	.05	.03
IN.	.08	.07	.05	.05	.07	.07	.08	.10	.21	.14	.06	.04
AC-FT	3660	3410	2400	2170	3290	3550	3670	4640	10280	6590	2640	1830

CAL YR 1980 TOTAL 50646 MEAN 138 MAX 1700 MIN 30 CFSM .15 IN 2.09 AC-FT 100500
WTR YR 1981 TOTAL 24265 MEAN 66.5 MAX 1280 MIN 20 CFSM .07 IN 1.00 AC-FT 48130

LITTLE SIOUX RIVER BASIN

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW1/4SW1/4 sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft (1 m) downstream from bridge on county highway M38, 3.4 mi (5.5 km) west by southwest of Spencer, and at mile 4.1 (6.6 km).

DRAINAGE AREA.--426 mi² (1,103 km²).

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft (399.794 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,960 ft³/s (112 m³/s) May 11, 1979, gage height, 9.54 ft (2.908 m); maximum gage height, 9.96 ft (3.036 m) Mar. 23, 1979, backwater from ice; no flow Jan. 24 to Mar. 9, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1953 reached a stage of 12.89 ft (3.929 m), discharge, 26,000 ft³/s (736 m³/s) on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) June 15, gage height, 6.75 ft (2.057 m), no peak above base of 1,700 ft³/s (48.1 m³/s); minimum daily, 7.3 ft³/s (0.21 m³/s) Dec. 19, Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	36	20	12	8.2	21	76	33	46	128	45	39
2	40	36	17	11	7.5	20	71	29	55	109	69	36
3	38	39	15	9.5	7.6	19	72	32	114	100	57	34
4	39	36	15	8.8	8.2	26	72	46	85	99	74	32
5	38	36	16	9.3	8.6	22	66	51	73	93	103	31
6	38	37	17	9.8	8.7	22	60	51	64	83	75	30
7	44	37	17	8.7	8.6	21	61	48	59	75	56	30
8	40	35	16	8.1	8.2	23	59	45	55	67	48	29
9	38	34	15	7.5	8.1	24	55	46	55	62	41	28
10	36	33	14	7.3	8.0	23	54	41	59	57	35	27
11	35	33	14	7.4	8.1	23	52	39	56	55	34	24
12	34	33	14	7.7	8.4	24	51	38	54	53	29	22
13	33	32	13	8.0	8.4	24	52	43	139	49	26	21
14	34	32	12	8.6	13	24	49	41	450	47	37	20
15	34	31	13	8.7	21	24	45	40	1070	46	213	20
16	39	30	13	8.5	32	23	45	37	773	45	116	21
17	44	30	12	8.6	51	24	46	36	457	45	88	21
18	41	29	12	9.0	90	24	42	35	322	54	63	20
19	39	28	7.3	8.7	83	25	45	31	262	50	49	20
20	38	27	9.0	9.4	51	26	43	32	213	43	43	19
21	39	27	9.6	10	38	27	40	26	183	41	38	19
22	37	26	10	10	30	26	46	26	165	41	36	18
23	37	26	10	11	22	25	45	258	148	42	36	17
24	37	24	9.9	11	22	25	41	136	132	38	36	18
25	36	21	9.2	11	20	27	39	93	124	35	60	20
26	36	22	10	10	17	32	38	71	109	36	88	21
27	36	22	11	9.8	22	29	37	63	98	36	95	28
28	35	23	11	9.3	25	32	37	61	109	38	70	24
29	35	23	11	8.6	---	92	36	64	249	36	51	22
30	36	22	12	8.4	---	79	34	57	165	34	45	22
31	36	---	16	8.8	---	80	---	51	---	34	42	---
TOTAL	1164	901	401.0	284.3	643.6	896	1808	1701	5931	1771	1894	730
MEAN	37.5	30.0	12.9	9.17	23.0	28.9	60.3	54.9	198	57.1	61.1	24.3
MAX	44	39	20	12	90	80	76	258	1070	128	213	39
MIN	33	21	7.3	7.3	7.5	19	34	26	46	34	26	17
CFSM	.09	.07	.03	.02	.05	.07	.12	.13	.47	.13	.14	.06
IN.	.10	.08	.04	.02	.06	.08	.13	.15	.52	.15	.17	.06
AC-FT	2310	1790	795	564	1280	1780	3590	3370	11760	3510	3760	1450

CAL YR 1980 TOTAL 43187.0 MEAN 118 MAX 1690 MIN 7.3 CFSM .28 IN 3.77 AC-FT 85660
WTR YR 1981 TOTAL 17824.9 MEAN 48.8 MAX 1070 MIN 7.3 CFSM .12 IN 1.56 AC-FT 35360

06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'24", long 95°14'30", in SW1/4 SW1/4 sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank at downstream side of bridge on State Highway 264, in Linn Grove, Iowa, and at mile 123.7 (199.0 km).

DRAINAGE AREA.--1,548 mi^2 (4,009 km^2).

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR IA-80-1: 1978-79.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft (372.95 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--9 years, 487 ft^3/s (13.79 m^3/s), 4.27 in/yr (108 mm/yr), 352,800 acre-ft/yr (435 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,620 ft^3/s (244 m^3/s) Apr. 29, 1975, gage height, 17.85 ft (5.441 m); maximum gage height, 18.2 ft (5.55 m), from graph based on gage readings, Mar. 24, 1979 (backwater from ice); minimum daily discharge, 0.70 ft^3/s (0.020 m^3/s) Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,790 ft^3/s (50.7 m^3/s) June 19, gage height, 10.19 ft (3.106 m) at 0800 hours, no other peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum daily, 40 ft^3/s (1.13 m^3/s) Feb. 10-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	128	115	55	44	132	231	107	223	1170	199	277
2	177	125	119	56	43	122	239	103	217	910	258	246
3	168	123	64	55	42	106	235	104	299	726	461	219
4	161	123	80	54	42	99	239	139	325	647	420	198
5	157	122	100	53	42	99	243	179	302	587	421	179
6	156	118	108	52	41	103	231	192	257	523	412	163
7	150	123	104	51	41	96	219	192	229	452	358	151
8	147	123	102	49	41	91	205	194	211	391	295	147
9	150	121	100	47	41	90	196	196	201	338	250	152
10	157	116	99	46	40	90	188	207	203	294	209	148
11	139	108	98	45	40	90	179	184	217	267	187	136
12	129	106	96	44	40	88	170	173	308	261	165	123
13	124	106	94	44	40	85	172	175	491	221	152	115
14	120	107	92	44	44	83	164	184	588	201	146	107
15	120	107	90	44	52	80	157	184	1140	183	174	99
16	139	107	88	44	60	80	148	177	1410	173	252	96
17	159	107	85	44	90	80	143	166	1540	162	299	94
18	175	102	84	44	120	77	141	154	1680	147	250	92
19	170	101	78	44	170	74	136	147	1730	150	213	91
20	159	105	70	45	215	73	134	136	1430	165	186	88
21	148	106	84	46	225	73	138	126	1110	149	167	86
22	140	105	84	47	235	77	138	117	942	185	149	81
23	140	103	76	48	229	79	147	114	810	244	138	78
24	143	102	64	50	205	77	147	114	725	335	131	77
25	145	83	51	52	181	76	138	333	639	357	129	80
26	141	72	50	54	168	79	129	443	557	316	144	83
27	137	99	50	56	129	79	126	355	489	268	204	84
28	133	98	50	54	126	85	119	308	436	247	221	128
29	132	99	52	49	---	103	116	287	464	240	338	194
30	131	109	53	47	---	139	114	275	942	227	340	136
31	130	---	54	45	---	186	---	251	---	212	312	---
TOTAL	4558	3254	2534	1509	2786	2891	5082	6016	20115	10748	7580	3948
MEAN	147	108	81.7	48.7	99.5	93.3	169	194	671	347	245	132
MAX	181	128	119	56	235	186	243	443	1730	1170	461	277
MIN	120	72	50	44	40	73	114	103	201	147	129	77
CFSM	.10	.07	.05	.03	.06	.06	.11	.13	.43	.22	.16	.09
IN.	.11	.08	.06	.04	.07	.07	.12	.14	.48	.26	.18	.09
AC-FT	9040	6450	5030	2990	5530	5730	10080	11930	39900	21320	15030	7830

CAL YR 1980 TOTAL 157645 MEAN 431 MAX 2960 MIN 50 CFSM .28 IN 3.79 AC-FT 312700
WTR YR 1981 TOTAL 71021 MEAN 195 MAX 1730 MIN 40 CFSM .13 IN 1.71 AC-FT 140900

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", long 95°47'49", in NE1/4 NW1/4 sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003, on right bank 50 ft, (15 m) upstream from bridge on State Highway 31, 0.3 mi (0.5 km) upstream from Bacon Creek, 0.5 mi (0.8 km) west of Correctionville, 0.8 mi (1.3 km) downstream from Pierson Creek, and at mile 56.0 (90.1 km).

DRAINAGE AREA.--2,500 mi^2 (6,475 km^2).

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,096.49 ft (334.210 m) NGVD. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi (0.3 km) downstream at datum 1.25 ft (0.381 m) lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--54 years (1918-24, 1928-31, 1936-81), 706 ft^3/s (19.99 m^3/s), 3.83 in/yr (97 mm/yr), 511,500 acre-ft/yr (631 hm^3/yr); median of yearly mean discharge, 550 ft^3/s (15.6 m^3/s), 3.0 in/yr (76 mm/yr), 398,000 acre-ft/yr (491 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft^3/s (844 m^3/s) Apr. 7, 1965, gage height, 25.86 ft (7.882 m); minimum daily, 2.6 ft^3/s (0.074 m^3/s) July 17, 25, 1936, caused by construction dam above gage; minimum daily discharge excluding regulation, 4.0 ft^3/s (0.11 m^3/s) Oct. 9, 12, 1956 (correction).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft (8.943 m), present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,810 ft^3/s (79.6 m^3/s) June 15, gage height, 11.84 ft (3.609 m), no peak above base of 4,000 ft^3/s (113 m^3/s); minimum daily, 66 ft^3/s (1.87 m^3/s) Jan. 31 to Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	344	256	210	125	66	266	356	205	423	838	378	414
2	320	250	120	125	66	248	369	197	404	1160	438	406
3	304	247	125	120	66	239	394	193	490	1280	439	391
4	298	244	130	110	66	232	406	250	579	1580	460	357
5	293	238	170	110	66	218	407	289	518	1440	558	309
6	285	238	175	100	66	206	395	295	500	1200	564	286
7	277	241	170	100	66	193	389	304	465	1040	530	273
8	270	238	165	100	66	189	366	316	421	920	505	251
9	258	235	160	90	66	190	345	313	391	815	463	224
10	246	232	160	80	66	183	332	304	417	726	412	211
11	239	227	160	75	66	177	319	301	539	660	367	209
12	230	227	160	70	66	175	302	316	451	594	329	205
13	224	227	160	70	70	175	305	316	1310	538	303	192
14	223	221	160	70	80	169	317	313	1740	492	294	179
15	219	219	160	70	90	168	295	307	2450	453	282	166
16	262	220	165	70	100	165	286	295	1650	418	263	158
17	313	218	170	70	120	162	280	292	1730	388	258	153
18	300	213	160	70	150	155	269	289	1730	372	313	150
19	286	208	130	70	200	149	259	277	1800	381	369	146
20	298	210	120	70	300	144	256	259	1860	396	340	142
21	292	215	135	70	436	146	248	238	1750	388	303	137
22	277	217	135	70	443	149	259	229	1480	364	274	130
23	270	222	130	70	429	149	271	448	1270	340	255	125
24	268	213	110	75	373	149	262	892	1160	333	238	122
25	268	170	100	80	375	152	256	616	1040	372	227	127
26	262	150	100	85	352	154	258	692	934	450	220	130
27	274	160	100	90	315	149	244	758	846	487	216	127
28	268	150	100	80	295	157	232	628	776	485	245	120
29	262	180	100	75	---	259	218	547	755	450	293	118
30	259	220	110	70	---	315	214	486	736	420	331	118
31	259	---	120	66	---	340	---	448	---	398	390	---
TOTAL	8448	6506	4370	2596	4920	5922	9109	11613	30613	20178	10857	6075
MEAN	273	217	141	83.7	176	191	304	375	1020	651	350	203
MAX	344	256	210	125	443	340	407	892	2450	1580	564	414
MIN	219	150	100	66	66	144	214	193	391	333	216	118
CFSM	.11	.09	.06	.03	.07	.08	.12	.15	.41	.26	.14	.08
IN.	.13	.10	.07	.04	.07	.09	.14	.17	.46	.30	.16	.09
AC-FT	16760	12900	8670	5150	9760	11750	18070	23030	60720	40020	21530	12050

CAL YR 1980 TOTAL 274658 MEAN 750 MAX 3780 MIN 100 CFSM .30 IN 4.09 AC-FT 544800
WTR YR 1981 TOTAL 121207 MEAN 332 MAX 2450 MIN 66 CFSM .13 IN 1.80 AC-FT 240400

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	298	246	173	125	366	1,170	1,810	1,030	1,500	998	506	402	719
RUNOFF (INCHES)	0.14	0.11	0.08	0.06	0.15	0.54	0.81	0.47	0.67	0.46	0.23	0.18	3.91
STD. DEVIATION	0.14	0.09	0.06	0.05	0.16	0.43	1.03	0.37	0.59	0.49	0.26	0.23	2.55
PERCENT OF ANNUAL	3.6	2.8	2.1	1.6	3.9	14	21	12	17	12	5.9	4.7	----
PRECIP. (INCHES)	1.9	0.9	0.7	0.5	0.9	1.4	2.2	4.1	5.0	3.8	3.3	3.0	27.7

06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'28", long 95°48'27", in SE1/4 SE1/4 sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank on downstream side of bridge on State Highway 175, 0.5 mi (0.8 km) southwest of Mapleton, 0.8 mi (1.3 km) downstream from Wilsey Creek, 2.0 mi (3.2 km) upstream from McClarey Creek, and 16.0 mi (25.7 km) upstream from mouth.

DRAINAGE AREA.--669 mi² (1,732 km²).

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,085.86 ft (330.970 m) NGVD. See WSP 1730 for history of changes prior to Sept. 20, 1956.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--40 years, 227 ft³/s (6.429 m³/s), 4.61 in/yr (117 mm/yr), 164,500 acre-ft/yr (203 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s (589 m³/s) Sept. 12, 1978, gage height, 16.74 ft (5.102 m); maximum gage height, 22.1 ft (6.74 m) June 12, 1950; no flow Sept. 21, 22, 1945 caused by temporary dam above gage; minimum daily discharge excluding regulation, 2.5 ft³/s (0.071 m³/s) Feb. 17-20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,580 ft³/s (73.1 m³/s) July 25, gage height, 5.96 ft (1.817 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 20 ft³/s (0.57 m³/s) Feb. 1-12, Sept 23,24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	74	64	35	20	71	86	32	40	82	77	40
2	57	72	50	30	20	67	74	30	43	64	824	38
3	57	70	55	25	20	64	66	32	40	113	598	37
4	59	68	65	25	20	70	68	61	37	204	240	35
5	60	64	74	25	20	68	70	68	34	590	166	32
6	58	66	71	25	20	63	64	59	31	387	118	31
7	56	66	67	25	20	61	57	52	29	266	99	32
8	56	66	61	25	20	56	53	49	27	198	88	29
9	56	63	60	25	20	58	50	44	26	157	78	29
10	55	64	60	25	20	58	49	43	24	131	67	28
11	54	63	65	25	20	56	48	41	25	110	63	26
12	53	63	67	25	20	54	44	40	27	103	63	26
13	54	68	71	25	25	55	46	45	28	97	58	25
14	54	69	71	25	35	55	44	47	79	93	59	23
15	54	68	72	25	50	52	43	45	330	85	56	23
16	201	67	69	25	100	50	44	39	325	82	50	26
17	193	68	68	25	172	53	45	40	196	72	50	24
18	131	68	50	30	163	53	44	42	114	69	48	24
19	106	69	40	30	167	53	42	42	88	69	43	24
20	93	71	30	30	165	53	40	38	74	71	50	23
21	85	69	35	30	138	58	42	32	64	61	46	22
22	76	66	40	35	119	58	48	33	60	64	43	22
23	75	65	35	35	100	55	50	162	56	66	44	20
24	81	66	30	40	88	55	47	167	71	62	45	20
25	78	55	30	40	85	58	42	121	70	387	46	27
26	74	60	30	40	81	59	40	80	64	121	42	28
27	78	63	30	35	77	57	37	69	53	99	42	25
28	79	64	35	30	75	60	35	59	90	104	47	23
29	77	63	40	25	---	86	35	58	366	98	48	23
30	77	69	40	25	---	90	33	51	131	91	51	23
31	76	---	40	25	---	94	---	42	---	86	45	---
TOTAL	2422	1987	1615	890	1880	1900	1486	1763	2642	4282	3394	808
MEAN	78.1	66.2	52.1	28.7	67.1	61.3	49.5	56.9	88.1	138	109	26.9
MAX	201	74	74	40	172	94	86	167	366	590	824	40
MIN	53	55	30	25	20	50	33	30	24	61	42	20
CFSM	.12	.10	.08	.04	.10	.09	.07	.09	.13	.21	.16	.04
IN.	.13	.11	.09	.05	.10	.11	.08	.10	.15	.24	.19	.04
AC-FT	4800	3940	3200	1770	3730	3770	2950	3500	5240	8490	6730	1600

CAL YR 1980 TOTAL 59917 MEAN 164 MAX 1120 MIN 30 CFSM .25 IN 3.33 AC-FT 118800
WTR YR 1981 TOTAL 25069 MEAN 68.7 MAX 824 MIN 20 CFSM .10 IN 1.39 AC-FT 49720

06607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52, long 95°58'21", in NW1/4 NE1/4 sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi (1.6 km) east of gaging station on Monona-Harrison ditch near Turin, 2.5 mi (4.0 km) downstream from Maple River, 3.8 mi (6.1 km) south of Turin, 6.2 mi (10.0 km) northeast of Blencoe, and at mile 13.5 (21.7 km).

DRAINAGE AREA.--3,526 mi² (9,132 km²). Prior to Jan. 15, 1958, 4,426 mi² (11,463 km²), combined area above this station and Monona-Harrison ditch station 1.0 mi (1.6 km) west.

PERIOD OF RECORD.--January 1958 to current year. April 1939 to May 1942 at site 4.7 mi (7.6 km) downstream published as "near Blencoe", June 1942 to January 1958 at site 1,200 ft (370 m) east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 mi (2.4 km) upstream.

GAGE.--Water-stage recorder. Datum of gage is 1,019.850 ft (310.850 m) NGVD (Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--23 years, 1,081 ft³/s (30.61 m³/s), 4.16 in/yr (106 mm/yr), 783,200 acre-ft/yr (966 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s (850 m³/s) Feb. 19, 1971, gage height, 27.44 ft (8.364 m), backwater from ice; minimum daily, 17 ft³/s (0.48 m³/s) Jan. 18-20, Jan. 28 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum dishcarge, 3,010 ft³/s (85.2 m³/s) June 16, gage height, 12.54 ft (3.822 m), no peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 100 ft³/s (2.83 m³/s) Jan. 31 to Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	455	297	250	190	100	421	446	241	552	851	421	443
2	429	300	230	190	100	379	482	239	538	975	475	456
3	404	303	200	190	100	358	488	253	518	1410	1230	430
4	392	298	200	170	100	353	478	271	577	1900	668	391
5	386	298	210	150	100	336	491	292	653	2050	631	376
6	375	300	220	140	100	324	508	324	595	1850	657	347
7	365	300	220	130	100	305	498	324	591	1480	653	333
8	355	300	220	120	100	295	440	333	545	1230	605	308
9	338	292	220	120	100	297	424	347	511	1060	573	287
10	334	287	220	120	100	295	412	322	485	919	525	266
11	314	289	220	120	100	289	379	316	511	818	468	249
12	311	292	230	120	100	284	361	324	616	737	412	234
13	315	292	240	120	110	276	350	341	570	657	385	231
14	309	292	250	120	120	271	336	336	1540	595	367	220
15	309	295	260	120	140	274	350	324	2270	542	330	210
16	335	287	270	120	160	258	350	324	2540	491	319	206
17	408	287	280	130	200	263	336	322	1950	456	308	195
18	353	287	250	130	300	256	305	322	1890	424	297	188
19	320	287	220	140	400	249	303	311	1880	409	322	190
20	304	284	190	140	600	244	289	297	1940	456	376	186
21	300	287	200	150	631	251	292	279	1980	421	367	181
22	311	305	220	150	620	253	303	269	1790	418	336	175
23	302	297	210	160	602	251	303	521	1500	391	316	175
24	295	284	200	160	584	253	305	1030	1300	367	303	179
25	292	263	180	170	518	256	300	1090	1200	587	292	184
26	290	246	160	180	501	258	292	753	1080	627	274	184
27	304	236	160	160	491	263	292	826	993	515	263	171
28	307	239	160	140	440	266	276	814	893	552	271	169
29	308	234	160	120	---	308	258	706	1320	538	295	167
30	305	261	170	110	---	397	246	631	975	521	333	160
31	301	---	180	100	---	427	---	580	---	456	385	---
TOTAL	10428	8519	6600	4380	7517	9210	10863	13662	34303	24703	13457	7491
MEAN	336	284	213	141	268	297	362	441	1143	797	434	250
MAX	455	305	280	190	631	427	508	1090	2540	2050	1230	456
MIN	290	234	160	100	100	244	246	239	485	367	263	160
CFSM	.10	.08	.06	.04	.08	.08	.10	.13	.32	.23	.12	.07
IN.	.11	.09	.07	.05	.08	.10	.11	.14	.36	.26	.14	.08
AC-FT	20680	16900	13090	8690	14910	18270	21550	27100	68040	49000	26690	14860

CAL YR 1980 TOTAL 348884 MEAN 953 MAX 4840 MIN 160 CFSM .27 IN 3.68 AC-FT 692000
WTR YR 1981 TOTAL 151133 MEAN 414 MAX 2540 MIN 100 CFSM .12 IN 1.59 AC-FT 299800

06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'52", long 95°55'50", in NW1/4 NE1/4 sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on right bank at downstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi (0.6 km) downstream from Cobb Creek, 0.5 mi (0.8 km) upstream from Mogger Ditch, and 13.1 mi (21.1 km) upstream from mouth.

DRAINAGE AREA.--407 mi^2 (1,054 km^2).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft (315.934 m) NGVD. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft (2.50 m) gage height Mar. 2, 1946, to Sept. 24, 1953.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years, 121 ft^3/s (3.427 m^3/s), 4.04 in/yr (103 mm/yr), 87,660 acre-ft/yr (108 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft^3/s (637 m^3/s) June 12, 1950, gage height, 28.17 ft (8.586 m); minimum daily, 2.0 ft^3/s (0.057 m^3/s) Jan. 2-10, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,220 ft^3/s (91.2 m^3/s) July 25, gage height, 10.25 ft (3.124 m), no peak above base of 5,000 ft^3/s (142 m^3/s); minimum daily, 5.6 ft^3/s (0.16 m^3/s) July 14, 15, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	25	25	17	13	34	34	15	8.9	68	18	15
2	15	25	20	17	12	32	30	15	11	27	48	14
3	14	22	18	17	11	32	29	16	12	30	152	13
4	15	21	20	16	10	33	36	99	11	351	42	12
5	15	21	21	15	10	30	37	115	9.1	110	162	12
6	15	22	23	15	10	30	33	48	8.6	39	85	11
7	16	22	21	15	10	30	29	30	7.8	22	32	33
8	15	22	20	14	10	30	26	24	6.9	16	23	34
9	14	21	20	14	10	30	24	21	7.1	12	20	19
10	14	20	20	13	9.0	30	24	19	6.6	11	17	15
11	14	20	20	13	9.0	30	24	18	6.8	9.3	16	13
12	15	22	20	12	9.0	30	23	17	6.4	7.6	15	12
13	16	22	20	12	10	30	23	20	5.8	6.4	15	11
14	17	24	21	12	12	30	22	21	10	5.6	17	11
15	16	24	22	12	15	28	21	19	11	5.6	17	10
16	59	23	22	12	30	28	23	16	6.7	5.8	15	11
17	80	22	21	12	50	29	24	18	7.4	5.7	15	12
18	42	19	18	13	100	26	23	25	7.5	5.6	15	12
19	28	22	17	13	81	25	23	26	7.3	5.9	14	12
20	24	24	19	14	67	25	22	20	7.2	31	14	12
21	21	23	17	15	64	26	22	16	7.8	40	13	11
22	21	25	16	15	57	28	77	15	7.5	10	13	11
23	24	24	15	17	44	28	47	14	7.2	7.5	14	10
24	26	21	14	18	41	28	32	14	7.0	6.0	16	11
25	28	20	14	20	43	31	25	13	6.9	436	19	12
26	24	19	14	19	39	31	22	12	7.4	591	16	13
27	24	20	14	18	38	31	19	11	10	68	15	14
28	25	23	14	17	38	30	18	11	7.9	50	23	12
29	26	28	15	16	---	38	17	11	490	35	28	10
30	28	30	16	15	---	48	15	10	279	24	17	9.7
31	27	---	17	14	---	41	---	9.5	---	20	15	---
TOTAL	733	676	574	463	852.0	952	824	738.5	995.8	2062.0	941	407.7
MEAN	23.6	22.5	18.5	14.9	30.4	30.7	27.5	23.8	33.2	66.5	30.4	13.6
MAX	80	30	25	20	100	48	77	115	490	591	162	34
MIN	14	19	14	12	9.0	25	15	9.5	5.8	5.6	13	9.7
CFSM	.06	.06	.05	.04	.08	.08	.07	.06	.08	.16	.08	.03
IN.	.07	.06	.05	.04	.08	.09	.08	.07	.09	.19	.09	.04
AC-FT	1450	1340	1140	918	1690	1890	1630	1460	1980	4090	1870	809

CAL YR 1980 TOTAL 20192.0 MEAN 55.2 MAX 1190 MIN 14 CFSM .14 IN 1.85 AC-FT 40050
WTR YR 1981 TOTAL 10219.0 MEAN 28.0 MAX 591 MIN 5.6 CFSM .07 IN .93 AC-FT 20270

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	57	47	36	47	131	273	121	155	291	134	121	79	124
RUNOFF (INCHES)	0.16	0.13	0.10	0.13	0.34	0.77	0.33	0.44	0.80	0.38	0.34	0.22	4.14
STD. DEVIATION	0.14	0.08	0.07	0.22	0.27	0.71	0.31	0.36	0.62	0.25	0.34	0.24	2.30
PERCENT OF ANNUAL	3.9	3.2	2.4	3.2	8.3	19	8.0	11	20	9.3	8.3	5.4	----
PRECIP. (INCHES)	1.8	0.9	0.7	0.6	1.0	1.6	2.4	4.0	5.3	3.2	3.6	2.6	27.5

06609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'33", long 95°46'57", in SE1/4 NW1/4 sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank 9 ft (3 m) downstream from Illinois Central Railroad bridge at Logan, 0.4 mi (0.6 km) downstream from Elk Grove Creek, 10.5 mi (16.9 km) upstream from Willow Creek, and 15.8 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--871 mi² (2,256 km²).

PERIOD OF RECORD.--May 1918 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 956: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft (307.659 m) NGVD (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--49 years (water years 1919-24, 1939-81), 301 ft³/s (8.524 m³/s), 4.69 in/yr (119 mm/yr), 218,100 acre-ft/yr (269 hm³/yr); median of yearly mean discharge, 270 ft³/s (7.65 m³/s), 4.2 in/yr (107 mm/yr), 196,000 acre-ft/yr (242 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s (708 m³/s) Feb. 19, 1971, gage height, 22.65 ft (6.904 m), from floodmark; maximum gage height, 25.22 ft (7.687 m) Mar. 1, 1965, backwater from ice; minimum daily discharge, 1.5 ft³/s (0.042 m³/s) July 16, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,350 ft³/s (208 m³/s) June 29, gage height, 12.96 ft (3.950 m) at 1230 hours, no other peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 19 ft³/s (0.54 m³/s) June 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	54	51	40	25	54	46	29	34	204	61	45
2	27	52	30	40	25	49	45	26	34	87	1350	41
3	27	53	35	30	25	43	43	29	32	62	661	35
4	28	50	40	30	25	45	49	180	30	1410	303	91
5	28	48	40	30	25	43	59	272	30	617	501	40
6	28	48	40	30	25	36	54	145	27	441	365	29
7	28	50	35	30	20	36	45	72	27	190	132	41
8	27	48	35	30	20	40	41	52	28	117	98	55
9	27	48	35	30	20	41	38	46	25	73	84	43
10	26	49	35	30	20	40	38	41	23	53	75	33
11	25	48	35	30	20	39	39	39	23	43	66	28
12	24	48	40	35	20	37	39	38	23	37	59	26
13	24	49	40	35	25	39	39	38	22	33	56	24
14	25	54	45	30	25	38	38	38	22	30	59	23
15	25	54	45	30	30	38	36	36	44	28	57	23
16	80	52	45	30	40	37	37	35	37	28	52	23
17	79	51	45	30	50	38	39	34	41	27	47	23
18	71	49	35	35	150	35	38	40	35	24	44	24
19	65	46	30	35	150	35	38	39	28	24	43	24
20	60	45	30	35	116	35	37	35	27	31	40	25
21	54	48	30	35	103	37	36	31	27	61	38	27
22	51	52	30	40	86	39	43	30	23	25	37	27
23	52	51	30	45	68	38	49	328	21	23	44	27
24	56	52	30	50	47	37	49	47	21	22	54	27
25	57	40	30	50	52	37	44	399	20	279	57	27
26	55	40	30	50	54	40	39	134	19	1470	55	30
27	56	45	30	45	54	44	35	76	26	216	40	30
28	56	45	35	40	54	41	33	57	22	114	53	27
29	55	52	35	35	---	43	30	47	2220	95	64	26
30	54	55	35	30	---	49	29	40	929	79	54	24
31	56	---	40	25	---	49	---	37	---	69	47	---
TOTAL	1355	1476	1121	1090	1374	1252	1225	2490	3920	6012	4696	968
MEAN	43.7	49.2	36.2	35.2	49.1	40.4	40.8	80.3	131	194	151	32.3
MAX	80	55	51	50	150	54	59	399	2220	1470	1350	91
MIN	24	40	30	25	20	35	29	26	19	22	37	23
CFSM	.05	.06	.04	.04	.06	.05	.05	.09	.15	.22	.17	.04
IN.	.06	.06	.05	.05	.06	.05	.05	.11	.17	.26	.20	.04
AC-FT	2690	2930	2220	2160	2730	2480	2430	4940	7780	11920	9310	1920

CAL YR 1980 TOTAL 56869 MEAN 155 MAX 3100 MIN 24 CFSM .18 IN 2.43 AC-FT 112800
WTR YR 1981 TOTAL 26979 MEAN 73.9 MAX 2220 MIN 19 CFSM .09 IN 1.15 AC-FT 53510

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	133	104	80	89	247	591	351	412	741	355	286	176	297
RUNOFF (INCHES)	0.18	0.13	0.11	0.12	0.30	0.78	0.45	0.54	0.95	0.47	0.38	0.22	4.63
STD. DEVIATION	0.19	0.09	0.07	0.18	0.25	0.72	0.44	0.44	0.70	0.40	0.43	0.24	2.73
PERCENT OF ANNUAL	3.9	2.8	2.4	2.6	6.5	17	9.7	12	20	10	8.2	4.8	----
PRECIP. (INCHES)	1.8	1.0	0.8	0.8	0.9	1.6	2.8	3.8	4.8	3.4	3.7	2.8	28.0

06610000 MISSOURI RIVER AT OMAHA, NB

LOCATION.--Lat 41°15'32", long 95°55'20", in SE1/4 NW1/4 sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft (84 m) downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9 (991.0 km).

DRAINAGE AREA.--322,800 mi^2 (836,100 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 958.24 ft (292.072 m) NGVD. See WSP 1730 for history of changes prior to Sept. 30, 1936.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--53 years, 29,850 ft^3/s (845.4 m^3/s), 21,630,000 acre-ft/yr (26,700 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft^3/s (11,200 m^3/s) Apr. 18, 1952, gage height, 30.20 ft (9.205 m); minimum, about 2,200 ft^3/s (62 m^3/s) Jan. 6, 1937; minimum gage height observed, -2.77 ft (-0.844 m) Jan. 10, 1957, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 47,800 ft^3/s (1,350 m^3/s) June 16, gage height, 9.68 ft (2.950 m); minimum daily, 12,900 ft^3/s (365 m^3/s) Feb. 11; minimum gage height, 0.00 ft (0.000 m) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39600	36900	25700	18500	18000	18000	37700	34700	32800	38600	34300	33800
2	39600	37800	23800	18500	16000	17900	37100	35100	32400	37800	36800	35000
3	39300	39100	21600	18000	15100	17500	35900	35300	33100	37900	36000	35100
4	39400	39400	20400	17200	13400	17500	36100	38900	34600	40200	35200	35100
5	39400	38800	20500	16700	13300	17400	36200	38100	34200	43400	35600	35300
6	39000	38200	20300	15600	14500	17300	35900	37900	33800	40300	37000	35000
7	39000	38400	19900	15500	15400	17400	35800	36700	33800	37200	35400	35800
8	38500	38600	19800	17900	16400	17400	35700	35700	34200	36800	34900	36000
9	38400	38600	19600	17000	16000	17500	36100	35900	34700	37200	34100	36100
10	38800	37800	19100	16200	14100	17400	36000	36000	34300	35800	33600	35300
11	38900	38000	19100	17200	12900	17200	36100	36000	34400	34500	33400	34900
12	38600	37800	18500	16600	13700	17300	35800	36200	35300	33800	33500	34600
13	38600	38300	19000	16000	13500	17300	36200	36200	35200	33500	33700	34600
14	37800	39000	20300	17000	13700	17100	36300	36400	35400	33400	34200	34900
15	37500	40700	19600	17100	16300	13400	35800	35900	40200	33300	35000	35600
16	39700	41000	19000	16600	18300	15900	35900	34800	47200	34100	35800	35500
17	40500	41000	19100	16200	19100	17000	35100	35300	44400	34200	35200	36000
18	40900	40600	19100	15300	20900	17000	34800	36700	40000	34400	34600	36000
19	39800	40700	18300	14700	23900	18200	34700	37000	35100	34600	34500	36100
20	39600	40600	17400	16600	25700	20200	35400	37200	33700	34800	34400	35800
21	38900	40500	16100	16100	22500	23500	35600	36100	34400	35600	34200	35300
22	38800	40300	15500	15500	17900	26200	36100	34700	34200	35000	34000	35500
23	38600	41200	16100	15300	17900	29100	35700	35200	33900	34800	34300	35900
24	38600	40700	16900	15100	17700	32600	35200	35500	33800	35300	34500	36200
25	38200	39900	18500	15700	17100	34800	35200	35400	34600	36000	34400	36100
26	38300	37000	17900	16000	16600	35400	35000	34200	34800	38800	34800	36100
27	38100	34400	15700	16300	16900	35700	34600	33300	34900	37500	34300	36100
28	37900	32500	17500	16300	17300	35800	34600	32900	34800	35900	34400	35300
29	38000	30000	18800	16200	---	36900	34800	33200	36600	35700	34400	35500
30	37800	28000	19000	16200	---	38300	34500	33300	39800	34600	34000	36100
31	37000	---	18400	15900	---	38200	---	33100	---	33900	33600	---
TOTAL	1203100	1145800	590500	509000	474100	712400	1069900	1102900	1070600	1118900	1074100	1064600
MEAN	38810	38190	19050	16420	16930	22980	35660	35580	35690	36090	34650	35490
MAX	40900	41200	25700	18500	25700	38300	37700	38900	47200	43400	37000	36200
MIN	37000	28000	15500	14700	12900	13400	34500	32900	32400	33300	33400	33800
AC-FT	2386000	2273000	1171000	1010000	940400	1413000	2122000	2188000	2124000	2219000	2130000	2112000

CAL YR 1980 TOTAL 11832600 MEAN 32330 MAX 47000 MIN 15500 AC-FT 23470000
WTR YR 1981 TOTAL 11135900 MEAN 30510 MAX 47200 MIN 12900 AC-FT 22090000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	30,600	24,000	11,800	11,500	14,600	26,500	50,700	36,000	47,200	41,800	33,900	32,700	30,100
RUNOFF (INCHES)	0.11	0.08	0.04	0.04	0.05	0.10	0.18	0.13	0.16	0.15	0.12	0.11	1.27
STD. DEVIATION	0.02	0.03	0.01	0.01	0.02	0.04	0.13	0.05	0.07	0.06	0.03	0.02	0.33
PERCENT OF ANNUAL	8.7	6.3	3.1	3.1	3.9	7.9	14	10	13	12	9.4	8.7	----
PRECIP. (INCHES)	1.2	0.6	0.5	0.4	0.5	1.0	1.6	2.4	3.0	2.0	2.3	2.0	17.7

06610000 MISSOURI RIVER AT OMAHA, NB--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected from Interstate 80 highway bridge 2.0 mi (3.2 km) downstream from gaging station.

PERIOD OF RECORD.--Water years 1969-76, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--
CHEMICAL ANALYSES: July 1969 to June 1972.
SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to September 1981 (discontinued).
WATER TEMPERATURES: October 1971 to September 1976, January 1978 to September 1981 (discontinued).
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 4,5, 1980; minimum daily, 335 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 165 mg/L Sept. 13, 1975.
SEDIMENT LOADS: Maximum daily, 1,060,000 tons (962,000 tonnes) May 19, 1974; minimum daily, 3,990 tons (3,620 tonnes Jan. 14, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 4,5; minimum daily, 625 micromhos Apr. 26.
WATER TEMPERATURES: Maximum daily, 30.0°C July 14,16,17; minimum daily, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	790	810	850	840	860	840	825	800	830	800	840	845
2	800	810	840	860	825	825	800	825	810	810	800	850
3	840	810	860	850	875	800	750	820	800	---	840	840
4	775	820	950	850	900	775	800	780	750	---	800	840
5	750	830	950	890	915	780	800	800	810	---	810	860
6	800	820	910	900	930	750	800	800	820	---	810	840
7	800	820	860	850	890	660	810	825	810	---	800	810
8	825	830	850	875	890	740	800	840	840	---	820	860
9	800	820	850	900	850	740	800	825	850	---	840	840
10	750	820	875	900	890	725	800	840	820	---	840	850
11	825	820	875	800	900	725	810	825	830	---	830	830
12	750	820	850	825	900	750	820	825	860	---	840	840
13	820	830	850	850	850	725	825	810	850	---	850	850
14	720	820	840	830	850	750	825	810	840	800	850	860
15	760	820	850	760	860	770	825	800	790	810	830	840
16	750	810	850	790	860	790	825	800	780	850	810	850
17	790	800	850	775	850	800	825	810	790	820	850	840
18	800	810	810	800	830	790	800	740	780	850	840	870
19	780	840	850	800	775	710	825	800	800	830	850	840
20	770	840	850	810	800	800	825	800	810	840	840	850
21	640	840	850	800	780	790	825	800	830	850	875	840
22	810	840	800	840	790	800	825	810	840	845	830	850
23	810	830	875	825	800	800	640	800	845	840	850	845
24	800	840	900	825	725	810	810	800	870	845	830	840
25	750	840	800	725	825	810	825	790	850	845	850	855
26	790	---	800	850	730	710	625	790	870	800	840	830
27	790	---	850	850	850	810	825	800	850	790	845	820
28	750	---	875	875	825	800	800	795	850	810	840	850
29	810	850	850	860	---	825	800	800	840	840	840	840
30	810	860	825	850	---	810	800	810	760	850	860	780
31	810	---	860	850	---	790	---	810	---	860	850	---

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	10.0	4.0	3.0	.0	7.0	12.0	16.0	22.0	26.0	25.0	24.0
2	17.0	10.0	1.0	3.0	.0	6.0	13.0	17.0	20.0	26.0	24.0	23.0
3	16.0	10.0	3.0	1.0	.0	6.0	12.0	17.0	22.0	---	26.0	24.0
4	16.0	13.0	6.0	1.0	.0	4.0	12.0	16.0	22.0	---	26.0	24.0
5	16.0	13.0	6.0	1.0	1.0	6.0	10.0	17.0	24.0	---	27.0	23.0
6	16.0	12.0	3.0	1.0	1.0	6.0	10.0	15.0	22.0	---	27.0	23.0
7	16.0	10.0	3.0	1.0	2.0	7.0	13.0	15.0	24.0	---	27.0	23.0
8	16.0	10.0	3.0	1.0	1.0	6.0	13.0	16.0	24.0	---	26.0	24.0
9	17.0	10.0	1.0	1.0	1.0	6.0	13.0	15.0	23.0	---	25.0	22.0
10	17.0	12.0	1.0	1.0	.0	6.0	12.0	14.0	24.0	---	26.0	24.0
11	15.0	10.0	2.0	.0	.0	6.0	14.0	13.0	23.0	---	25.0	25.0
12	14.0	12.0	4.0	3.0	2.0	9.0	14.0	14.0	24.0	---	25.0	22.0
13	15.0	11.0	2.0	2.0	1.0	8.0	13.0	16.0	25.0	---	25.0	24.0
14	14.0	8.0	2.0	1.0	1.0	8.0	13.0	16.0	24.0	30.0	27.0	23.0
15	14.0	6.0	3.0	2.0	3.0	8.0	13.0	16.0	24.0	28.0	26.0	22.0
16	15.0	8.0	4.0	.0	3.0	9.0	12.0	16.0	23.0	30.0	25.0	21.0
17	13.0	7.0	4.0	1.0	8.0	9.0	13.0	15.0	23.0	30.0	24.0	21.0
18	11.0	8.0	3.0	2.0	5.0	9.0	14.0	14.0	21.0	28.0	24.0	19.0
19	11.0	8.0	2.0	2.0	7.0	8.0	13.0	15.0	22.0	28.0	24.0	18.0
20	13.0	8.0	.0	2.0	2.0	8.0	13.0	15.0	21.0	29.0	24.0	20.0
21	11.0	8.0	.0	2.0	5.0	6.0	12.0	19.0	22.0	26.0	26.0	20.0
22	14.0	5.0	2.0	3.0	5.0	7.0	14.0	19.0	22.0	28.0	24.0	21.0
23	12.0	5.0	1.0	4.0	7.0	9.0	13.0	18.0	23.0	28.0	24.0	20.0
24	13.0	6.0	1.0	5.0	7.0	9.0	14.0	18.0	24.0	26.0	24.0	20.0
25	9.0	6.0	1.0	5.0	7.0	9.0	14.0	19.0	25.0	27.0	26.0	21.0
26	9.0	---	1.0	5.0	6.0	10.0	11.0	19.0	25.0	24.0	24.0	20.0
27	9.0	---	1.0	5.0	7.0	12.0	14.0	19.0	26.0	24.0	24.0	18.0
28	8.0	---	1.0	4.0	7.0	12.0	16.0	20.0	25.0	23.0	24.0	20.0
29	9.0	6.0	3.0	2.0	---	10.0	17.0	20.0	26.0	22.0	24.0	19.0
30	9.0	6.0	2.0	2.0	---	12.0	17.0	22.0	26.0	24.0	25.0	20.0
31	10.0	---	3.0	2.0	---	11.0	---	22.0	---	24.0	24.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
06...	1200	38900	850	7.4	15.0	24	8.8	90	220	200
NOV										
03...	1300	38900	800	7.9	10.0	19	10.4	97	100	52
DEC										
01...	1445	26000	810	8.3	4.0	22	12.3	98	180	<10
JAN										
05...	0845	18000	845	7.8	.0	3.7	13.9	99	210	63
FEB										
04...	1200	5520	900	7.8	.0	8.1	13.6	96	200	180
MAR										
02...	1030	17900	815	8.1	3.5	16	12.5	98	680	260
APR										
07...	1200	36000	810	8.2	10.0	34	11.5	106	310	310
MAY										
04...	1200	39600	790	7.8	16.0	450	8.0	84	54000	45000
JUN										
08...	1300	34000	840	8.3	25.0	21	7.9	94	K540	110
JUL										
06...	1230	40500	800	7.6	26.0	110	6.4	78	35000	4600
AUG										
03...	1230	35900	830	7.7	24.5	170	7.7	96	13000	4200
SEP										
03...	1045	35500	805	8.5	22.0	18	10.1	120	175	115

K Results based on colony count outside the acceptable range (non-ideal colony count).

06610000 - MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
OCT 06...	250	93	60	25	80	40	2.2	5.6	160	230
NOV 03...	250	89	60	24	74	39	2.0	5.3	160	240
DEC 01...	270	87	64	26	80	39	2.1	6.2	--	230
JAN 05...	290	100	72	27	75	35	1.9	5.3	--	250
FEB 04...	290	130	72	27	77	36	2.0	5.3	--	250
MAR 02...	270	98	66	25	75	37	2.0	4.8	--	240
APR 07...	260	--	63	25	77	39	2.1	5.3	--	260
MAY 04...	250	--	60	24	72	38	2.0	5.6	--	240
JUN 08...	--	--	--	--	--	--	--	--	--	240
JUL 06...	260	--	62	25	71	37	1.9	5.4	--	230
AUG 03...	260	--	64	25	79	39	2.3	5.9	--	240
SEP 03...	250	--	57	25	79	41	2.4	5.2	--	260

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 06...	14	.5	7.2	550	519	.75	57800	.08	.000	.00
NOV 03...	12	.5	7.1	536	520	.73	56300	.12	.050	.06
DEC 01...	12	.4	6.9	555	535	.75	39000	.19	.110	.13
JAN 05...	14	.5	9.6	569	569	.77	27700	.35	.060	.07
FEB 04...	15	.4	9.5	580	554	.79	8640	.26	.150	.18
MAR 02...	14	.4	7.5	530	537	.72	25600	.30	.100	--
APR 07...	10	.5	5.9	529	544	.72	51400	.15	.030	--
MAY 04...	11	.4	5.4	532	509	.72	56900	.05	.060	--
JUN 08...	12	.5	--	546	--	.74	50100	.19	.050	--
JUL 06...	13	.5	8.0	521	509	.71	57000	.83	.110	--
AUG 03...	16	.5	6.3	647	534	.88	62700	.20	.110	--
SEP 03...	12	.5	7.3	555	542	.75	53200	.09	.030	--

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT 06...	.86	.86	.13	.73	.94	4.2	.040	.12	.030
NOV 03...	.91	.96	.49	.47	1.1	4.8	.280	.86	.100
DEC 01...	.63	.74	.12	.62	.93	4.1	.090	.28	.060
JAN 05...	.57	.63	.00	.63	.98	4.3	.060	.18	.020
FEB 04...	.65	.80	.27	.53	1.1	4.7	.080	.25	.040
MAR 02...	.78	.88	.12	.76	1.2	5.2	.110	.34	.060
APR 07...	2.0	2.00	1.2	.83	2.2	9.5	.140	.43	.040
MAY 04...	4.3	4.40	3.2	1.2	4.5	20	1.70	5.2	.180
JUN 08...	.84	.89	.00	1.0	1.1	4.8	.120	.37	.040
JUL 06...	2.2	2.30	1.1	1.2	3.1	14	.440	1.4	.080
AUG 03...	1.3	1.40	1.1	.35	1.6	7.1	.480	1.5	.040
SEP 03...	.70	.73	.23	.50	.82	3.6	.110	.34	.040

06610000 MISSOURI RIVER AT OMAHA, NE--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
OCT								
06...	1200	--	--	--	--	4.8	--	--
NOV								
03...	1300	4300	757	79800	15	--	4.0	--
DEC								
01...	1445	--	378	26800	17	11	--	--
JAN								
05...	0845	--	33	1800	85	9.8	--	--
FEB								
04...	1200	--	--	--	--	--	4.3	.1
MAR								
02...	1030	--	240	11600	19	11	--	--
APR								
07...	1200	--	--	--	--	9.0	--	--
MAY								
04...	1200	12000	2690	288000	91	--	4.7	8.8
JUN								
08...	1300	--	354	32500	21	5.8	--	--
JUL								
06...	1230	--	974	107000	55	12	--	--
15...	1310	22000	--	--	--	--	--	--
AUG								
03...	1230	15000	--	--	--	--	4.4	2.8
SEP								
03...	1045	9800	--	--	--	7.4	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
NOV										
03...	1300	3	1	--	--	50	--	--	10	--
FEB										
04...	1200	2	1	100	40	60	1	0	1	10
MAY										
04...	1200	20	2	700	600	100	0	0	1	80
AUG										
03...	1230	6	2	300	200	90	51	49	2	30

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)
NOV										
03...	--	0	--	--	<3	--	--	11	--	--
FEB										
04...	0	10	0	--	<3	9	2	7	830	820
MAY										
04...	80	0	24	24	0	80	76	4	48000	48000
AUG										
03...	30	0	9	--	<3	37	29	8	18000	18000

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
NOV										
03...	<10	--	--	5	--	--	10	.4	.4	.0
FEB										
04...	10	78	76	2	80	40	40	.1	.0	.2
MAY										
04...	30	42	40	2	2500	2500	30	.2	.2	.0
AUG										
03...	81	17	17	0	830	820	9	.2	.2	.0

DATE	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV									
03...	--	--	5	2	0	2	--	--	20
FEB									
04...	5	3	2	2	0	2	130	80	50
MAY									
04...	62	61	1	0	0	1	220	210	10
AUG									
03...	24	22	2	1	0	1	160	60	97

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM DIS-SOLVED, EXTRAC-TION (UG/L) (80020)
MAY									
04...	1200	16	200	9.7	110	9.4	110	.16	--
AUG									
03...	1230	<15	30	8.2	23	7.9	22	.14	5.2

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	NOV 3,80	MAY 4,81	JUL 15,81	AUG 3,81	SEP 3,81
TIME	1300	1200	1310	1230	1045
TOTAL CELLS/ML	4300	12000	22000	15000	9800
DIVERSITY: DIVISION	1.6	0.8	1.5	1.1	1.1
.CLASS	1.6	0.8	1.5	1.1	1.1
..ORDER	1.9	1.2	1.8	1.1	1.1
...FAMILY	2.2	1.9	2.0	2.0	1.4
....GENUS	3.0	2.6	2.7	2.3	2.5
				3.1	3.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	*	0	--	-	96	1
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	670	7
...HYDRODICTYACEAE										
....PEDIASTRUM	350	8	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	340	3
....MICRACTINIUM	--	-	140	1	--	-	--	-	190	2
...OOCYSTACEAE										
....ANKISTRODESMUS	100	2	--	-	210	1	280	2	190	2
....DICTYOSPHAERIUM	300	7	--	-	630	3	1100	7	1700#	18
....KIRCHNERIELLA	--	-	--	-	310	1	--	-	--	-
....OOCYSTIS	--	-	--	-	210	1	560	4	620	6
....QUADRIGULA	--	-	--	-	--	-	560	4	--	-
....SELENASTRUM	25	1	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	*	0	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	370	3	--	-	140	1	580	5
....SCENEDESMUS	100	2	190	2	1800	8	420	3	670	7
....TETRASTRUM	--	-	--	-	420	2	280	2	580	6
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	75	2	--	-	*	0	350	2	--	-
...PHACOTACEAE										
....PHACOTUS	--	-	--	-	210	1	--	-	--	-
...VOLVOCACEAE										
....EUDORINA	--	-	--	-	--	-	1300	8	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	1300#	29	1300	11	4600#	21	3400#	23	2200#	22
....MELOSIRA	280	6	--	-	5000#	23	3500#	23	1100	11
....STEPHANODISCUS	700#	16	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	25	1	3600#	29	--	-	--	-	--	-
....FRAGILARIA	25	1	3700#	31	--	-	--	-	240	2
....SYNEDRA	--	-	--	-	--	-	*	0	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	*	0	--	-	--	-	--	-
...NAVICULACEAE										
....DIPLONEIS	--	-	--	-	--	-	*	0	--	-
....NAVICULA	--	-	140	1	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	75	2	1500	12	630	3	2600#	17	480	5
...SURIRELLACEAE										
....SURIRELLA	--	-	140	1	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	75	2	--	-	*	0	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	50	1	--	-	--	-	140	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	420	2	--	-	--	-
....ANACYSTIS	880#	20	--	-	7500#	33	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	1200	10	--	-	350	2	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	140	1
....TRACHELOMONAS	25	1	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB

LOCATION.--Lat 40°40'55", long 95°50'48", in NW1/4 NE1/4 sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 0.7 mi (1.1 km) upstream from Waubonsie Highway Bridge at Nebraska City, and at mile 562.6 (905.2 km).

DRAINAGE AREA .--410,000 mi² (1,062,000 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft (275.954 m) NGVD, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--52 years, 35,630 ft³/s (1,009 m³/s), 25,810,000 acre-ft/yr (31,800 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s (11,700 m³/s) Apr. 19, 1952; maximum gage height, 27.66 ft (8.431 m) Apr. 18, 1952; minimum discharge, 1,600 ft³/s (45.3 m³/s) Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft (-0.085 m) Dec. 24, 1960, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 61,200 ft³/s (1,730 m³/s) Aug. 7, gage height, 13.58 ft (4.139 m); minimum daily, 13,700 ft³/s (388 m³/s) Feb. 12; minimum gage height, 2.10 ft (0.640 m) Feb. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40600	39700	30400	20900	19600	23500	45000	37800	35500	40100	36000	37400
2	40700	39900	28500	22800	18000	23200	43000	37600	35700	40200	41300	37500
3	40200	40800	25400	22600	17000	22300	41000	37800	36400	39800	42000	37400
4	40500	41200	23300	21600	16000	21700	40500	43900	38000	39300	40100	37500
5	40700	40600	22500	20000	14600	21200	39900	44100	38000	40900	43500	37500
6	40500	40100	22400	19400	15700	20900	38900	43500	37300	40800	50400	36800
7	40600	40100	22900	18200	17400	20700	39200	41200	36900	39000	57400	38400
8	40300	40400	22400	19800	18700	20700	38900	38400	36400	37500	48800	37100
9	40200	40200	22700	20100	19000	20800	37900	38300	35700	37100	43200	37600
10	40200	40500	22400	18600	17400	20900	37300	37700	36700	36300	41600	37400
11	40000	40400	22000	19100	13800	20900	37600	37000	35900	35300	39200	36700
12	39800	40200	22000	19100	13700	20900	37800	37400	35700	34600	38600	37200
13	39400	41000	21800	18600	15400	20700	37600	37200	36200	34600	38100	37100
14	39300	41000	22300	19300	15100	21100	38900	37800	36200	34500	38600	37400
15	39500	42700	22900	20000	17200	20200	38900	38300	40500	35600	38400	38100
16	41500	44100	23500	19800	21800	19400	38500	37700	46300	35300	38900	37200
17	42800	44500	24100	19100	22600	20900	38100	37400	46200	35500	38800	37000
18	44100	44800	25000	18800	23400	21100	37600	39100	43400	35300	37800	36800
19	42200	43600	24800	18900	25900	20500	37500	40100	39600	35800	37300	37300
20	41600	43600	23800	19400	25600	22100	37300	40700	37700	35500	37500	37400
21	41700	43500	20100	19700	29600	24700	37500	39400	37100	35600	37500	37600
22	40700	43700	18000	19000	28100	27400	37800	38000	37500	36100	37100	37700
23	40700	44500	18000	18900	25400	29800	38300	38400	36400	36400	37300	37800
24	41000	45200	18900	19500	24200	33300	37500	38200	36100	36400	38400	38400
25	40400	45100	19300	20000	24000	37000	37500	38400	36000	36800	38500	39300
26	40200	43500	19000	21000	23800	39100	37900	38200	35800	37600	39500	40000
27	40100	39300	17300	21600	23800	39900	37700	37500	36100	38300	39700	39000
28	41500	35700	17900	21800	23500	40500	37700	36600	36300	37200	39300	38600
29	41100	34300	19400	22200	---	41900	37900	36500	36900	36900	38300	38000
30	40600	32500	20500	22000	---	42800	38200	36200	41100	36600	38400	38000
31	39800	---	21000	20900	---	44900	---	36200	---	36300	37900	---
TOTAL	1262500	1236700	684600	622700	570300	825000	1159400	1196600	1133600	1147200	1249400	1131200
MEAN	40730	41220	22080	20090	20370	26610	38650	38600	37790	37010	40300	37710
MAX	44100	45200	30400	22800	29600	44900	45000	44100	46300	40900	57400	40000
MIN	39300	32500	17300	18200	13700	19400	37300	36200	35500	34500	36000	36700
AC-FT	2504000	2453000	1358000	1235000	1131000	1636000	2300000	2373000	2248000	2275000	2478000	2244000

CAL YR 1980 TOTAL 13775600 MEAN 37640 MAX 64300 MIN 17300 AC-FT 27320000
WTR YR 1981 TOTAL 12219200 MEAN 33480 MAX 57400 MIN 13700 AC-FT 24240000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	34,800	28,500	15,500	14,700	20,900	36,600	59,000	44,200	59,500	48,400	38,000	36,300	35,400
RUNOFF (INCHES)	0.10	0.08	0.04	0.04	0.05	0.10	0.16	0.12	0.16	0.14	0.11	0.10	1.19
STD. DEVIATION	0.02	0.02	0.01	0.01	0.02	0.04	0.10	0.04	0.06	0.05	0.02	0.02	0.29
PERCENT OF ANNUAL	8.4	6.7	3.4	3.4	4.2	8.4	13	10	13	12	9.2	8.4	----
PRECIP. (INCHES)	1.3	0.7	0.6	0.5	0.6	1.1	1.7	2.7	3.4	2.3	2.6	2.3	19.6

06807320 WEST NISHNABOTNA RIVER AT HARLAN, IA

LOCATION.--Lat 41°38'41", long 95°18'50", in NW1/4 NE1/4 sec. 19, T.79 N., R.38 W., Shelby County, Hydrologic Unit 10240002, in southeast part of City of Harlan, in city owned brick pumphouse on right bank, 50 ft (15 m) landward of levee, 250 ft (76 m) downstream from State Highway 44, 1.4 mi (2.3 km) downstream from confluence with West Fork, 80.1 mi (128.9 km) upstream from confluence with East Nishnabotna River, and at mile 95.6 (153.8 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--316 mi² (818 km²).

PERIOD OF RECORD.--Oct. 1, 1977 to current year. Occasional low-flow measurements, water years 1957-77.

GAGE.--Water-stage recorder. Datum of gage is 1,162.894 ft (354.450 m) NGVD.

REMARKS.-- Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s (411 m³/s) Sept. 13, 1978, gage height, 26.18 ft (7.980 m); minimum daily, 4.1 ft³/s (0.12 m³/s) June 6, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,060 ft³/s (58.3 m³/s) Aug. 2, gage height, 11.69 ft (3.563 m) at 1145 hours, no other peak above base 1,500 ft³/s (42.5 m³/s); minimum daily, 4.1 ft³/s (0.12 m³/s) June 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	21	16	22	10	30	21	6.8	5.6	44	19	14
2	17	20	12	22	10	26	19	6.4	6.2	26	714	12
3	18	20	15	18	10	27	23	35	6.0	86	183	11
4	21	16	18	14	10	28	74	290	5.1	377	72	120
5	20	16	20	14	10	29	58	70	4.5	89	61	26
6	21	17	20	12	10	25	27	39	4.1	49	54	16
7	21	18	18	12	10	26	18	29	26	31	38	58
8	20	16	15	12	10	32	20	28	7.2	29	31	36
9	18	15	15	12	10	23	17	23	5.1	36	27	20
10	16	14	15	12	10	24	16	21	4.8	29	24	15
11	16	13	18	12	10	23	16	19	5.6	21	22	13
12	20	15	20	12	10	23	15	18	4.4	17	20	12
13	17	17	22	12	12	22	13	17	4.2	22	22	11
14	18	21	25	12	16	21	16	17	7.3	30	25	9.3
15	20	17	28	12	22	21	13	17	326	42	22	9.8
16	78	15	30	12	30	20	14	15	107	42	19	13
17	81	16	25	12	60	19	13	16	53	23	17	12
18	33	17	20	14	150	21	11	27	35	16	16	11
19	20	18	15	14	120	26	14	22	27	21	15	11
20	19	18	15	16	100	19	12	16	25	63	14	10
21	18	17	15	15	75	19	13	13	27	59	14	9.4
22	16	16	15	18	63	20	25	12	25	26	13	8.5
23	21	16	15	20	58	17	46	177	23	20	14	9.2
24	28	14	15	22	48	16	18	35	20	16	21	9.3
25	24	15	15	22	43	23	10	23	18	15	16	12
26	18	15	15	22	36	27	7.6	20	12	20	59	14
27	19	15	15	20	36	21	5.3	17	15	46	38	11
28	21	15	18	18	36	21	4.4	9.8	13	42	82	8.9
29	22	16	18	18	---	30	5.0	8.5	328	28	47	8.4
30	21	18	20	14	---	36	7.6	7.4	130	21	25	7.6
31	22	---	20	12	---	31	---	6.4	---	19	16	---
TOTAL	744	498	563	478	1025	746	570.9	1061.3	1280.1	1405	1760	538.4
MEAN	24.0	16.6	18.2	15.4	36.6	24.1	19.0	34.2	42.7	45.3	56.8	17.9
MAX	81	21	30	22	150	36	74	290	328	377	714	120
MIN	16	13	12	12	10	16	4.4	6.4	4.1	15	13	7.6
CFSM	.08	.05	.06	.05	.12	.08	.06	.11	.14	.14	.18	.06
IN.	.09	.06	.07	.06	.12	.09	.07	.12	.15	.17	.21	.06
AC-FT	1480	988	1120	948	2030	1480	1130	2110	2540	2790	3490	1070

CAL YR 1980 TOTAL 21297.0 MEAN 58.2 MAX 1450 MIN 12 CFSM .18 IN 2.51 AC-FT 42240
WTR YR 1981 TOTAL 10669.7 MEAN 29.2 MAX 714 MIN 4.1 CFSM .09 IN 1.26 AC-FT 21160

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24",long 95°22'17",in NW1/4 NE1/4 sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi (1.0 km) west of Hancock school, and 3.0 mi (4.8 km) downstream from Jim Creek, 59.6 mi (95.9 km) upstream from confluence with East Nishnabotna River, and at mile 75.1 mi (120.8 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi^2 (1,577 km^2).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft (330.95 1 m) NGVD. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 256 ft^3/s (7.250 m^3/s), 5.71 in/yr (145 mm/yr), 185,500 acre-ft/yr (229 hm^3/yr); median of yearly mean discharges, 230 ft^3/s (6.51 m^3/s), 5.1 in/yr (130 mm/yr), 167,000 acre-ft/yr (206 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft^3/s (748 m^3/s) Sept. 13, 1972, gage height, 22.12 ft (6.742 m); minimum daily, 2.2 ft^3/s (0.062 m^3/s) Feb. 8, 9, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,510 ft^3/s (71.1 m^3/s) May 4, gage height, 6.75 ft (2.057 m), no peak above base of 4,000 ft^3/s (113 m^3/s); minimum daily, 14 ft^3/s (0.40 m^3/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	56	41	35	18	61	41	24	32	103	33	32
2	44	53	29	35	18	55	37	24	36	57	286	91
3	42	53	35	25	18	53	36	37	35	58	482	43
4	46	51	35	25	18	55	161	1260	32	298	113	56
5	47	50	40	20	18	55	114	224	29	175	77	130
6	47	49	45	20	18	51	71	114	27	86	66	48
7	46	51	55	20	18	46	57	82	26	68	55	58
8	47	49	50	20	18	45	50	69	45	64	46	69
9	46	49	40	20	18	46	45	64	35	58	40	117
10	44	46	44	20	18	46	44	58	26	54	38	121
11	41	45	45	20	18	44	41	54	26	48	36	113
12	42	46	52	20	18	45	40	53	29	44	34	79
13	46	48	50	20	20	44	39	54	27	39	34	63
14	46	47	39	20	25	41	39	53	26	37	38	60
15	46	49	49	20	35	41	37	50	407	38	36	48
16	87	47	50	20	50	40	35	47	226	40	33	26
17	111	46	50	20	100	40	36	47	77	40	27	24
18	77	39	48	25	220	37	34	57	54	41	26	21
19	57	42	20	25	180	35	34	60	46	37	25	21
20	52	45	25	25	154	36	33	50	44	38	24	20
21	51	43	30	30	137	40	30	41	47	62	21	18
22	50	44	30	30	110	47	40	39	43	50	20	17
23	50	45	30	30	100	44	53	151	36	39	21	15
24	55	40	25	30	90	41	48	166	34	36	26	17
25	57	35	20	35	82	41	36	63	30	34	29	26
26	53	36	20	35	77	45	33	50	29	37	27	32
27	54	50	25	35	73	48	32	44	35	43	64	25
28	58	41	25	30	67	43	26	40	37	58	61	18
29	55	49	25	26	---	47	25	38	74	49	81	15
30	57	48	30	22	---	49	24	35	275	40	55	14
31	58	---	30	20	---	56	---	33	---	35	40	---
TOTAL	1659	1392	1132	778	1736	1417	1371	3181	1925	1906	1994	1437
MEAN	53.5	46.4	36.5	25.1	62.0	45.7	45.7	103	64.2	61.5	64.3	47.9
MAX	111	56	55	35	220	61	161	1260	407	298	482	130
MIN	41	35	20	20	18	35	24	24	26	34	20	14
CFSM	.09	.08	.06	.04	.10	.08	.08	.17	.11	.10	.11	.08
IN.	.10	.09	.07	.05	.11	.09	.08	.19	.12	.12	.12	.09
AC-FT	3290	2760	2250	1540	3440	2810	2720	6310	3820	3780	3960	2850

CAL YR 1980 TOTAL 48906 MEAN 134 MAX 3490 MIN 20 CFSM .22 IN 2.99 AC-FT 97010
WTR YR 1981 TOTAL 19928 MEAN 54.6 MAX 1260 MIN 14 CFSM .09 IN 1.22 AC-FT 39530

NISHNABOTNA RIVER BASIN

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE1/4 NE1/4 sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge (revised) on State Highway 184, 0.3 mi (0.5 km) downstream from Deer Creek, 0.5 mi (0.8 km) west of Randolph, and 16.0 mi (25.7 km) upstream from confluence with East Nishnabotna River and at mile 31.5 (50.7 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi² (3,434 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft (284.375 m) NGVD, unadjusted. Prior to Aug. 26, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft (2.56 m) June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--33 years, 534 ft³/s (15.12 m³/s), 5.47 in/yr (139 mm/yr), 386,900 acre-ft/yr (477 hm³/yr); median of yearly mean discharges, 480 ft³/s (13.6 m³/s), 4.9 in/yr (124 mm/yr), 348,000 acre-ft/yr (429 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,800 ft³/s (1,010 m³/s) June 21, 1967, gage height, 22.60 ft (6.888 m); maximum gage height, 24.8 ft (7.56 m) Mar. 5, 1949, from graph based on gage readings (backwater from ice); minimum daily discharge, 10 ft³/s (0.283 m³/s) Dec. 17-21, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft (7.3 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,970 ft³/s (55.8 m³/s) May 4, gage height, 10.89 ft (3.319), no peak above base of 6,500 ft³/s (184 m³/s); minimum daily, 58 ft³/s (1.64 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199	192	162	130	80	181	149	82	88	278	106	129
2	193	190	130	140	80	175	138	81	267	180	508	105
3	192	185	150	130	80	172	132	82	434	136	290	116
4	197	178	180	100	80	191	132	818	167	132	530	141
5	199	175	195	90	80	196	195	1160	117	283	225	178
6	197	178	180	100	80	177	215	353	97	284	177	218
7	197	172	170	100	80	163	170	220	90	175	155	506
8	194	172	160	100	80	155	162	182	85	325	135	341
9	191	168	160	100	80	157	153	162	92	897	122	197
10	185	165	160	100	80	157	137	150	97	160	107	181
11	178	168	160	100	80	155	135	137	85	119	100	207
12	176	168	160	100	80	151	127	135	82	101	92	198
13	181	168	158	103	85	148	127	140	86	90	92	174
14	182	168	155	110	90	146	135	137	90	87	102	134
15	183	168	155	100	100	146	127	127	192	511	100	124
16	218	165	150	100	120	143	125	117	458	123	92	122
17	336	165	150	100	180	141	122	117	348	105	85	99
18	281	162	150	100	500	136	117	160	180	606	81	88
19	243	160	120	105	700	131	120	197	137	521	78	81
20	201	155	100	110	411	131	122	160	115	168	77	78
21	191	162	100	115	316	139	120	132	120	121	75	71
22	182	170	100	120	273	152	142	120	112	119	74	68
23	182	162	100	130	241	147	157	110	112	132	75	63
24	190	155	100	140	209	142	137	132	97	108	81	65
25	190	152	100	150	200	138	130	275	92	106	80	69
26	185	152	100	150	195	135	110	155	85	122	102	68
27	202	152	100	150	193	134	102	125	88	122	112	70
28	225	152	100	130	186	141	92	115	86	121	263	70
29	208	152	100	110	---	154	88	112	170	143	492	65
30	195	158	110	100	---	161	86	105	171	136	211	58
31	192	---	120	90	---	154	---	92	---	120	151	---
TOTAL	6265	4989	4235	3503	4959	4749	4004	6190	4440	6631	4970	4084
MEAN	202	166	137	113	177	153	133	200	148	214	160	136
MAX	336	192	195	150	700	196	215	1160	458	897	530	506
MIN	176	152	100	90	80	131	86	81	82	87	74	58
CFSM	.15	.13	.10	.09	.13	.12	.10	.15	.11	.16	.12	.10
IN.	.18	.14	.12	.10	.14	.13	.11	.17	.12	.19	.14	.11
AC-FT	12430	9900	8400	6950	9840	9420	7940	12280	8810	13150	9860	8100

CAL YR 1980 TOTAL 156214 MEAN 427 MAX 6840 MIN 100 CFSM .32 IN 4.38 AC-FT 309900
WTR YR 1981 TOTAL 59019 MEAN 162 MAX 1160 MIN 58 CFSM .12 IN 1.66 AC-FT 117100

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION (revised).--Lat 41°20'46", long 95°04'36", in NW1/4 NW1/4 sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi (2.6 km) upstream from Turkey Creek, 5.2 mi (8.4 km) southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi (112.2 km) upstream from confluence with West Nishnabotna River, and at mile 84.6 (136.1 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi^2 (1,129 km^2).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft (337.057 m) NGVD. Prior to Oct. 1, 1970, at site 2.2 mi (3.5 km) upstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 200 ft^3/s (5.664 m^3/s), 6.23 in/yr (158 mm/yr), 144,900 acre-ft/yr (179 hm^3/yr); median of yearly mean discharges, 170 ft^3/s (4.81 m^3/s), 5.3 in/yr (135 mm/yr), 123,000 acre-ft/yr (150 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft^3/s (756 m^3/s) Sept. 12, 1972, gage height, 22.81 ft (6.952 m); minimum daily, 2.5 ft^3/s (0.071 m^3/s) July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,650 ft^3/s (46.7 m^3/s) June 15, gage height, 7.21 ft (2.198 m), no peak above base of 3,000 ft^3/s (85.0 m^3/s); minimum daily, 10 ft^3/s (0.28 m^3/s) Feb. 4-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	37	25	28	14	39	27	25	21	19	14	25
2	25	35	12	30	12	35	26	22	91	16	114	22
3	25	33	15	28	12	33	24	21	72	30	208	19
4	25	33	20	14	10	35	46	194	28	313	59	66
5	25	33	18	14	10	33	50	113	24	87	42	137
6	25	33	16	14	10	29	33	52	21	47	34	43
7	25	33	14	14	10	27	30	40	18	36	28	92
8	25	33	12	14	10	26	29	35	29	30	25	168
9	24	33	12	14	10	26	26	34	24	29	23	61
10	24	33	12	14	10	27	25	31	18	25	23	43
11	22	33	12	14	10	29	25	28	16	23	22	35
12	22	34	12	14	10	29	26	29	18	18	21	31
13	22	34	14	14	10	27	27	30	16	16	21	28
14	24	34	16	14	12	27	29	30	15	14	74	25
15	25	35	18	14	14	26	26	27	693	24	68	24
16	37	34	20	14	16	25	25	26	167	64	32	24
17	39	34	22	14	40	26	24	26	62	45	26	24
18	39	35	24	14	150	27	24	29	40	34	23	23
19	34	33	22	16	127	25	26	28	29	62	22	24
20	33	33	16	18	98	25	26	26	25	64	20	20
21	31	33	12	18	81	26	25	23	25	49	21	22
22	31	34	12	18	60	27	31	22	28	30	20	20
23	34	34	12	18	50	27	29	543	24	22	20	19
24	37	33	12	20	45	26	29	289	25	20	24	20
25	40	32	12	20	46	27	26	79	23	21	22	21
26	36	33	12	20	44	28	26	50	18	22	23	23
27	35	35	12	20	42	29	24	38	20	20	71	22
28	36	35	12	18	40	26	24	29	18	25	65	21
29	37	33	12	16	---	31	24	29	36	25	85	19
30	37	34	14	16	---	30	24	26	24	19	46	18
31	38	---	16	14	---	30	---	24	---	16	30	---
TOTAL	937	1011	470	528	1003	883	836	1998	1668	1265	1326	1139
MEAN	30.2	33.7	15.2	17.0	35.8	28.5	27.9	64.5	55.6	40.8	42.8	38.0
MAX	40	37	25	30	150	39	50	543	693	313	208	168
MIN	22	32	12	14	10	25	24	21	15	14	14	18
CFSM	.07	.08	.04	.04	.08	.07	.06	.15	.13	.09	.10	.09
IN.	.08	.09	.04	.05	.09	.08	.07	.17	.14	.11	.11	.10
AC-FT	1860	2010	932	1050	1990	1750	1660	3960	3310	2510	2630	2260

CAL YR 1980 TOTAL 39448 MEAN 108 MAX 4600 MIN 12 CFSM .25 IN 3.37 AC-FT 78250
WTR YR 1981 TOTAL 13064 MEAN 35.8 MAX 693 MIN 10 CFSM .08 IN 1.11 AC-FT 25910

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'41", long 95°14'07", in NW1/4 SE1/4 sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on left bank on downstream side of Coolbaugh Street bridge in Red Oak, and 0.2 mi (0.3 km) upstream from Red Oak Creek, 38.0 mi (61.1 km) upstream from confluence with West Nishnabotna River, and at mile 53.5 (86.1 km), above mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi^2 (2,315 km^2).

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft (306.461 m) NGVD. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft (1.402 m) higher. May 29, 1936, to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft (0.975 m) gage height July 30, 1939, to Nov. 13, 1952, and Nov. 14, 1952, to June 13, 1966, water-stage recorder, all at site 0.5 mi (0.8 km) upstream at datum 5.00 ft (1.524 m) higher. June 14, 1966, to Sept. 30, 1969, at present site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years (water years 1918-24, 1936-81), 90.5 ft^3/s (2.563 m^3/s), 5.59 in/yr (142 mm/yr), 266,600 acre-ft/yr (329 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft^3/s (1,080 m^3/s) Sept. 13, 1972, gage height, 27.43 ft (8.361 m); maximum gage height, 28.23 ft (8.605 m) June 13, 1947, present datum; minimum daily discharge, 6 ft^3/s (0.17 m^3/s) Aug. 18, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,710 ft^3/s (48.4 m^3/s) June 16, gage height, 8.48 ft (2.585 m), no peak above base of 4,500 ft^3/s (127 m^3/s); minimum daily, 24 ft^3/s (0.68 m^3/s) Aug. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	70	82	80	45	125	85	59	60	45	41	70
2	78	70	60	80	40	120	73	58	63	33	88	51
3	73	70	70	70	40	104	67	55	361	29	324	43
4	77	70	80	60	40	109	70	167	189	225	241	81
5	80	68	95	60	40	113	132	513	99	378	111	224
6	80	68	114	60	40	107	120	210	78	124	81	215
7	75	68	141	60	40	98	88	134	65	69	64	237
8	75	68	130	60	40	86	97	107	60	63	51	276
9	75	66	95	60	40	85	86	95	86	63	45	251
10	73	72	84	60	40	82	74	89	69	52	40	125
11	67	78	75	60	40	79	72	79	58	44	34	91
12	66	78	79	60	40	78	77	77	50	41	30	75
13	67	82	86	60	40	79	75	81	45	37	29	64
14	67	84	75	60	45	73	84	85	40	34	42	56
15	68	84	72	60	50	71	86	78	269	38	116	51
16	87	84	79	60	60	70	75	69	988	48	95	49
17	124	81	76	60	80	70	73	69	228	100	46	49
18	108	79	75	65	150	68	69	87	107	366	36	51
19	91	76	50	70	492	68	66	97	72	437	30	48
20	79	77	55	75	311	63	71	83	57	139	28	47
21	76	78	60	80	249	66	73	71	53	106	25	45
22	76	76	60	85	233	74	79	67	53	78	24	43
23	76	80	60	90	198	74	90	65	54	57	25	42
24	76	80	60	95	161	73	89	752	46	46	33	40
25	74	69	60	100	146	71	76	299	42	47	34	42
26	74	65	60	100	145	71	63	145	37	53	44	43
27	74	76	60	90	137	73	61	100	36	61	47	47
28	74	83	65	80	133	75	59	79	37	54	253	42
29	72	79	70	55	---	79	57	74	42	62	222	38
30	72	80	75	55	---	95	58	72	80	58	172	36
31	72	---	80	50	---	98	---	67	---	47	110	---
TOTAL	2407	2259	2383	2160	3115	2597	2345	4083	3524	3034	2561	2572
MEAN	77.6	75.3	76.9	69.7	111	83.8	78.2	132	117	97.9	82.6	85.7
MAX	124	84	141	100	492	125	132	752	988	437	324	276
MIN	66	65	50	50	40	63	57	55	36	29	24	36
CFSM	.09	.08	.09	.08	.12	.09	.09	.15	.13	.11	.09	.10
IN.	.10	.09	.10	.09	.13	.11	.10	.17	.15	.13	.11	.11
AC-FT	4770	4480	4730	4280	6180	5150	4650	8100	6990	6020	5080	5100

CAL YR 1980 TOTAL 95233 MEAN 260 MAX 7850 MIN 50 CFSM .29 IN 3.96 AC-FT 188900
WTR YR 1981 TOTAL 33040 MEAN 90.5 MAX 988 MIN 24 CFSM .10 IN 1.37 AC-FT 65530

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	160	134	99	121	308	718	438	610	846	435	296	241	367
RUNOFF (INCHES)	0.21	0 .17	0.13	0.16	0.36	0.93	0.55	0.79	1.06	0.56	0.38	0.30	5.57
STD. DEVIATION	0.21	0.14	0.09	0.16	0.25	0.82	0.44	0.72	1.17	0.61	0.35	0.36	2.78
PERCENT OF ANNUAL	3.8	3.1	2.3	2.9	6.5	17	9.9	14	19	10	6.8	5.4	----
PRECIP. (INCHES)	2.1	1.1	0.9	0.7	0.9	2.0	2.8	4.0	5.3	3.3	4.0	3.7	30.8

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°37'57", long 95°37'32", in SW1/4 SE1/4 sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi (2.1 km) downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi (3.2 km) northeast of Hamburg, and at mile 13.8 (22.2 km).

DRAINAGE AREA.--2,806 mi² (7,268 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft (272.543 m) NGVD. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--54 years, 1,022 ft³/s (28.94 m³/s), 4.95 in/yr (126 mm/yr), 740,400 acre-ft/yr (913 hm³/yr); median of yearly mean discharges, 900 ft³/s (25.5 m³/s), 4.4 in/yr (112 mm/yr), 652,000 acre-ft/yr (800 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,500 ft³/s (1,570 m³/s) June 24, 1947, gage height, 26.03 ft (7.934 m), present site and datum, from floodmark; maximum gage height, 27.46 ft (8.370 m) Mar. 7, 1979 (backwater from ice); minimum daily discharge, 4.5 ft³/s (0.13 m³/s) Aug. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,190 ft³/s (90.3 m³/s) July 9, gage height, 13.29 ft (4.051 m), no peak above base of 9,000 ft³/s (255 m³/s); minimum daily, 116 ft³/s (3.29 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	289	343	321	270	550	398	276	164	187	354	324	305
2	276	359	150	280	500	377	267	155	195	323	1750	225
3	265	353	200	270	400	363	253	147	795	226	899	187
4	262	339	250	260	300	358	239	170	577	215	871	230
5	262	329	336	250	270	454	233	1380	356	308	914	250
6	262	352	418	240	250	391	321	1050	241	703	634	376
7	260	340	438	240	240	347	344	539	207	395	446	918
8	261	322	568	240	230	318	303	391	186	271	349	943
9	265	313	409	240	220	309	288	321	175	1920	311	518
10	250	305	352	240	210	303	291	279	193	500	279	435
11	270	296	324	220	200	297	276	256	191	271	256	384
12	256	294	329	220	200	294	265	242	176	218	234	300
13	263	302	321	230	210	294	256	236	168	189	207	260
14	269	315	324	240	220	285	300	245	163	171	203	216
15	272	310	309	250	250	273	276	248	755	1210	201	179
16	327	305	334	250	400	267	262	228	732	492	217	168
17	457	306	340	240	1200	265	251	214	1270	236	247	160
18	473	299	328	240	1380	253	239	239	529	462	236	142
19	412	301	154	250	1360	248	228	350	338	1910	209	129
20	367	295	350	260	1030	248	225	347	265	1690	179	136
21	343	298	250	280	800	253	217	291	237	433	163	136
22	326	312	180	290	670	282	242	248	235	334	153	126
23	307	307	210	300	627	285	303	236	225	598	147	117
24	349	297	240	320	524	276	309	228	210	455	146	120
25	347	260	250	340	472	270	288	754	203	274	143	151
26	335	240	250	387	440	259	262	624	195	284	151	152
27	378	270	250	364	429	256	231	328	181	356	156	152
28	459	293	250	294	419	253	206	253	179	384	160	147
29	399	309	250	211	---	276	190	232	173	360	859	129
30	345	320	250	280	---	288	175	213	414	356	569	116
31	333	---	260	500	---	285	---	201	---	342	411	---
TOTAL	9939	9284	9193	8496	14001	9365	7816	10809	9951	16240	12024	7777
MEAN	321	309	297	274	500	302	261	349	332	524	388	259
MAX	473	359	568	500	1380	454	344	1380	1270	1920	1750	943
MIN	250	240	150	211	200	248	175	147	163	171	143	116
CFSM	.11	.11	.11	.10	.18	.11	.09	.12	.12	.19	.14	.09
IN.	.13	.12	.12	.11	.19	.12	.10	.14	.13	.22	.16	.10
AC-FT	19710	18410	18230	16850	27770	18580	15500	21440	19740	32210	23850	15430

CAL YR 1980 TOTAL 315780 MEAN 863 MAX 11900 MIN 150 CFSM .31 IN 4.19 AC-FT 626300
WTR YR 1981 TOTAL 124895 MEAN 342 MAX 1920 MIN 116 CFSM .12 IN 1.66 AC-FT 247700

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	521	431	334	395	844	1,850	1,230	1,640	2,710	1,350	870	711	1,070
RUNOFF (INCHES)	0.21	0.17	0.14	0.16	0.31	0.76	0.49	0.67	1.08	0.55	0.36	0.28	5.18
STD. DEVIATION	0.18	0.13	0.10	0.14	0.20	0.64	0.42	0.59	1.25	0.44	0.25	0.24	2.68
PERCENT OF ANNUAL	4.1	3.3	2.7	3.1	6.0	15	9.5	13	21	11	6.9	5.4	----
PRECIP. (INCHES)	2.5	1.1	0.9	0.7	1.0	2.0	2.6	4.0	5.2	3.7	3.8	3.2	30.6

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1979 to September 1981 (discontinued).
WATER TEMPERATURES: April 1979 to September 1981 (discontinued).

REMARKS.--Daily samples for specific conductance and water temperature are collected from Hwy 275 bridge in Hamburg, located 2.4 mi (3.9 km) below gaging station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 815 micromhos Sept. 16,18, 19, 28,30, 1979; minimum daily, 155 micromhos, July 20, 1981.
WATER TEMPERATURES: Maximum daily, 32.0°C July 14, 1980; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 650 micromhos Oct. 7, Dec. 3; minimum daily, 155 micromhos July 20.
WATER TEMPERATURES: Maximum daily, 28.0°C July 12,13; minimum daily, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	580	440	---	---	580	520	540	590	380	450	380
2	510	560	450	---	---	580	510	570	580	385	320	400
3	510	600	490	---	---	500	500	570	440	385	305	430
4	520	560	410	---	---	550	530	570	320	425	380	470
5	510	540	470	---	---	540	495	420	310	480	380	470
6	510	550	410	---	---	540	510	340	390	430	340	450
7	550	580	490	---	---	580	490	350	460	330	400	440
8	540	540	520	---	---	560	510	400	520	380	455	290
9	530	570	520	---	---	580	510	480	540	240	460	340
10	540	560	480	---	---	540	530	510	550	275	425	420
11	540	560	610	---	---	530	545	550	575	340	455	440
12	500	560	640	---	---	520	545	580	550	455	495	---
13	500	560	530	---	---	580	545	590	530	450	500	---
14	480	540	520	---	---	590	450	590	520	430	510	---
15	500	560	580	---	---	570	545	590	380	420	470	---
16	520	530	570	---	---	570	530	595	330	200	460	530
17	520	530	610	---	---	600	545	595	390	310	465	540
18	560	530	590	---	---	610	540	545	310	235	460	540
19	---	450	550	---	---	580	545	540	350	200	485	500
20	---	430	---	---	---	570	540	550	380	155	450	550
21	---	420	---	---	390	600	500	500	450	270	455	530
22	560	410	---	---	410	590	515	550	490	380	530	510
23	560	450	---	---	430	500	530	510	530	360	545	470
24	540	440	---	---	460	490	550	570	530	380	475	530
25	540	430	---	---	390	510	540	455	455	400	400	490
26	520	400	---	---	510	520	545	310	430	430	380	470
27	520	380	---	490	450	500	480	350	380	450	420	540
28	560	410	---	530	540	510	530	415	515	430	370	580
29	560	430	---	460	---	440	545	470	510	480	300	580
30	580	410	---	490	---	440	545	520	400	500	270	560
31	570	---	---	---	---	450	---	560	---	495	---	---

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	7.0	3.0	---	---	9.0	17.0	21.0	21.0	25.0	25.0	22.0
2	15.0	7.0	1.0	---	---	8.0	15.0	16.0	22.0	26.0	24.0	19.0
3	11.0	11.0	1.0	---	---	4.0	18.0	16.0	22.0	26.0	25.0	20.0
4	10.0	9.0	2.0	---	---	5.0	11.0	20.0	23.0	24.0	26.0	22.0
5	12.0	8.0	5.0	---	---	6.0	10.0	18.0	24.0	20.0	27.0	22.0
6	13.0	10.0	3.0	---	---	9.0	13.0	17.0	24.0	26.0	27.0	23.0
7	14.0	11.0	5.0	---	---	6.0	18.0	15.0	24.0	27.0	25.0	23.0
8	15.0	10.0	2.0	---	---	4.0	15.0	15.0	24.0	22.0	24.0	21.0
9	15.0	11.0	1.0	---	---	6.0	14.0	16.0	24.0	24.0	24.0	21.0
10	16.0	9.0	1.0	---	---	9.0	17.0	11.0	22.0	26.0	24.0	24.0
11	14.0	9.0	.0	---	---	8.0	21.0	13.0	21.0	27.0	23.0	23.0
12	12.0	9.0	2.0	---	---	7.0	19.0	16.0	23.0	28.0	24.0	---
13	12.0	11.0	1.0	---	---	12.0	19.0	15.0	25.0	28.0	24.0	---
14	15.0	7.0	1.0	---	---	9.0	12.0	14.0	25.0	27.0	24.0	---
15	14.0	9.0	2.0	---	---	10.0	12.0	17.0	23.0	18.0	26.0	---
16	16.0	6.0	2.0	---	---	11.0	14.0	20.0	20.0	27.0	25.0	24.0
17	16.0	4.0	2.0	---	---	10.0	17.0	15.0	22.0	27.0	23.0	25.0
18	15.0	3.0	3.0	---	---	5.0	17.0	13.0	22.0	26.0	21.0	23.0
19	---	2.0	.0	---	---	5.0	18.0	11.0	21.0	26.0	21.0	25.0
20	---	3.0	---	---	---	8.0	15.0	16.0	23.0	25.0	20.0	19.0
21	---	3.0	---	---	9.0	6.0	13.0	18.0	23.0	27.0	21.0	19.0
22	14.0	3.0	---	---	7.0	6.0	19.0	19.0	22.0	24.0	22.0	18.0
23	13.0	6.0	---	---	4.0	10.0	15.0	21.0	23.0	25.0	23.0	18.0
24	11.0	3.0	---	---	6.0	13.0	17.0	19.0	24.0	26.0	24.0	21.0
25	12.0	.0	---	---	8.0	13.0	17.0	20.0	25.0	26.0	23.0	20.0
26	9.0	.0	---	---	9.0	15.0	19.0	21.0	24.0	25.0	23.0	22.0
27	8.0	.0	---	3.0	9.0	14.0	21.0	22.0	24.0	23.0	23.0	18.0
28	5.0	.0	---	6.0	9.0	18.0	20.0	22.0	25.0	21.0	23.0	21.0
29	6.0	1.0	---	2.0	---	14.0	18.0	22.0	25.0	20.0	25.0	19.0
30	5.0	3.0	---	1.0	---	14.0	18.0	21.0	23.0	22.0	25.0	20.0
31	11.0	---	---	---	---	17.0	---	21.0	---	25.0	---	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 07...	1245	269	650	7.8	11.0	8.9	11.1	104	350	K120
DEC 03...	1300	200	650	7.6	.0	7.6	14.3	102	280	K75
MAR 02...	1040	401	610	8.1	4.0	28	14.6	111	310	650
MAY 19...	1210	437	545	8.1	16.0	130	14.6	81	K240000	45000
JUL 13...	1130	337	420	8.2	28.0	35	8.4	110	1250	350
SEP 01...	1030	330	400	8.0	22.0	85	8.5	96	K9400	2000

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT 07...	260	35	68	23	21	15	.6	3.8	43	22
DEC 03...	300	24	79	26	19	12	.5	3.4	47	20
MAR 02...	270	--	73	21	13	9	.3	3.7	47	12
MAY 19...	240	--	64	20	20	15	.6	6.6	50	24
JUL 13...	190	--	49	16	18	16	.6	8.9	55	20
SEP 01...	170	--	44	14	14	15	.5	8.5	16	19

K Results based on colony count outside the acceptable range (non-ideal colony count).

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT 07...	.3	8.6	344	336	.47	250	1.8	.000	.00
DEC 03...	.3	13	389	387	.53	210	2.4	.280	.34
MAR 02...	.3	13	323	324	.44	350	2.1	.070	--
MAY 19...	.3	9.7	324	317	.44	382	1.3	.280	--
JUL 13...	.4	9.3	270	267	.37	246	.10	.040	--
SEP 01...	.2	8.2	242	222	.33	216	1.6	.210	--

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT 07...	1.1	1.10	.47	.63	2.9	13	.560	1.7	.260
DEC 03...	.82	1.10	.27	.83	3.5	16	.160	.49	.100
MAR 02...	2.5	2.60	1.0	1.6	4.7	21	.240	.74	.160
MAY 19...	2.5	2.80	1.0	1.8	4.1	18	.620	1.9	.260
JUL 13...	2.2	2.20	.20	2.0	2.3	10	.480	1.5	.170
SEP 01...	1.9	2.10	1.2	.92	3.7	16	.460	1.4	.090

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT 07...	1245	4800	--	--	--	--	3.8	.5
DEC 03...	1300	--	87	47	57	5.0	--	--
MAR 02...	1040	2500	113	122	93	--	8.4	1.2
MAY 19...	1210	52000	--	--	--	--	13	--
JUL 13...	1130	350000	--	--	--	7.0	--	--
SEP 01...	1030	110000	--	--	--	--	5.2	1.4

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
OCT 07...	1245	3	3	300	100	200	1	--	<1	0
MAR 02...	1040	3	3	200	100	100	1	0	2	10
MAY 19...	1210	1	3	300	100	200	1	0	--	20
SEP 01...	1030	7	5	200	60	140	1	--	<1	10

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 07...	0	0	0	<3	8	0	8	770	--	<10
MAR 02...	10	0	3	<3	10	3	7	2100	2100	30
MAY 19...	10	10	5	<3	17	9	8	10000	9200	780
SEP 01...	10	0	4	<3	21	11	10	7000	7000	17

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
OCT 07...	4	3	1	90	60	30	.1	.0	.1
MAR 02...	13	13	0	170	120	50	.2	.0	.6
MAY 19...	10	5	5	650	590	60	.5	.1	.4
SEP 01...	40	35	5	620	620	3	.2	.2	.0

DATE	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 07...	4	4	0	0	0	1	20	10	6
MAR 02...	2	0	3	3	2	1	30	0	30
MAY 19...	14	10	4	2	0	2	120	0	--
SEP 01...	13	11	2	2	1	1	40	40	5

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE	OCT 7,80	MAR 2,81	MAY 19,81	JUL 13,81	SEP 1,81
TIME	1245	1040	1210	1130	1030
TOTAL CELLS/ML	4800	2500	52000	350000	110000
DIVERSITY: DIVISION	1.6	1.7	1.7	1.0	0.9
.CLASS	1.6	1.7	1.7	1.0	0.9
..ORDER	2.4	2.2	2.6	1.2	1.1
...FAMILY	3.1	3.0	2.7	2.5	1.2
....GENUS	3.2	3.1	2.8	3.2	1.2

ORGANISM	OCT 7,80 CELLS /ML	PER- CENT	MAR 2,81 CELLS /ML	PER- CENT	MAY 19,81 CELLS /ML	PER- CENT	JUL 13,81 CELLS /ML	PER- CENT	SEP 1,81 CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	5900	2	--	-
...MICRACTINIACEAE										
....GOLENKINIA	63	1	--	-	--	-	--	-	--	-
....MICRACTINIUM	760*	16	--	-	--	-	57000*	17	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	47	2	700	1	8300	2	--	-
....DICTYOSPHAERIUM	63	1	--	-	--	-	43000	12	7200	6
....GLOEOACTINIUM	--	-	--	-	--	-	19000	5	--	-
....KIRCHNERIELLA	--	-	23	1	--	-	--	-	--	-
....OOCYSTIS	350	7	--	-	--	-	--	-	--	-
....SELENASTRUM	32	1	--	-	--	-	4800	1	--	-
....TETRAEDRON	--	-	--	-	--	-	2100	1	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	85000*	25	--	-
....CRUCIGENIA	--	-	--	-	--	-	5500	2	--	-
....SCENEDESMUS	280	6	93	4	2100	4	23000	7	6100	5
....TETRASTRUM	--	-	--	-	2800	5	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	1000	1
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	1200*	25	180	7	3200	6	*	0	1000	1
....CHLOROGONIUM	--	-	--	-	--	-	*	0	--	-
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	*	0	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	320	7	210	8	14000*	27	12000	3	90000*	79
..PENNALES										
...DIATOMACEAE										
....DIATOMA	32	1	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	160	3	190	8	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	690	15	910*	37	8800*	17	3400	1	3100	3
...SURIRELLACEAE										
....SURIRELLA	32	1	280	11	350	1	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...CHROMULINACEAE										
....CHRYSOCOCCUS	--	-	23	1	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	70	3	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	130	3	93	4	--	-	2800	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	540	11	180	7	13000*	24	7600	2	6100	5
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	5300	10	62000*	18	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	160	3	--	-	1400	3	--	-	--	-
....TRACHELOMONAS	--	-	190	8	700	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	23	1	--	-	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06811840 TARKIO RIVER AT STANTON, IA

LOCATION.--Lat 40°58'52", long 95°06'32", in NW1/4 SW1/4 sec.4, T.71 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, on right bank 10 ft (3 m) downstream from bridge on county highway H42, 0.1 mi (0.2 km) downstream from Little Tarkio Creek, and 0.5 mi (0.8 km) west of Stanton.

DRAINAGE AREA.--49.3 mi² (127.7 km²).

PERIOD OF RECORD.--October 1957 to current year. Annual maximum, water years 1952-57.

REVISED RECORDS.--WSP 1919: 1960 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,104.67 ft (336.703 m) NGVD.

REMARKS.--Records poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 26.0 ft³/s (0.736 m³/s), 7.16 in/yr (182 mm/yr), 18,840 acre-ft/yr (23.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) June 9, 1967, gage height, 28.56 ft (8.705 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 252 ft³/s (7.14 m³/s) July 19, gage height, 10.60 ft (3.231 m), no peak above base of 1,500 ft³/s (42.5 m³/s); no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	3.7	4.4	1.9	1.2	1.9	1.7	1.4	2.1	4.5	5.9	3.4
2	1.7	3.7	1.8	1.9	1.1	1.9	1.7	.88	7.1	4.1	69	2.7
3	1.7	3.2	1.7	1.9	1.0	1.8	1.7	.39	13	3.8	19	1.7
4	1.7	3.0	1.7	1.8	.93	1.9	1.7	.82	4.7	4.0	9.1	32
5	1.7	3.2	1.7	1.7	.90	1.9	1.7	2.4	3.6	3.9	7.5	16
6	1.7	2.5	5.2	1.7	.68	1.9	1.7	2.5	2.4	3.1	6.5	9.1
7	1.7	3.0	4.9	1.7	.05	1.9	1.6	1.5	1.2	2.1	5.7	56
8	1.7	2.3	3.7	1.7	.00	1.8	12	1.2	.69	1.3	5.4	22
9	1.7	1.8	1.8	1.7	.00	1.8	5.3	2.1	1.7	4.8	5.2	14
10	1.7	1.8	1.8	.93	.01	1.8	4.3	3.0	.94	3.6	5.0	10
11	1.6	1.8	1.8	.03	.00	1.9	4.2	2.9	.72	2.0	4.6	8.6
12	1.6	3.4	1.8	.00	.00	1.8	9.5	3.0	.60	.50	4.2	7.6
13	1.7	3.9	1.8	.00	.00	1.8	5.3	4.3	.52	.00	4.1	6.8
14	1.7	5.5	1.8	.00	1.7	1.8	6.4	5.5	.49	.00	4.6	6.6
15	1.7	4.9	1.8	.03	6.1	1.8	5.2	4.8	6.5	.69	4.2	6.1
16	1.7	4.4	1.8	.23	50	1.8	4.8	3.9	4.8	1.0	3.3	5.5
17	1.7	4.4	1.8	.00	44	1.8	5.1	3.9	3.6	1.6	2.2	5.4
18	1.7	3.4	1.8	.00	3.9	1.8	4.7	11	2.7	52	1.2	5.5
19	1.7	4.2	1.8	.00	2.0	1.7	4.6	8.1	1.6	73	.34	5.5
20	1.7	5.9	1.8	.18	2.0	1.7	5.0	6.2	.76	15	.00	5.4
21	1.7	5.5	1.7	1.6	1.9	1.7	4.7	5.2	1.1	7.5	.00	5.1
22	1.7	4.4	1.7	1.7	1.9	1.8	8.3	5.1	1.6	6.6	.00	4.6
23	1.7	4.2	1.6	1.8	1.9	1.8	6.1	5.3	1.4	6.0	.00	4.0
24	1.7	1.8	1.7	1.9	1.9	1.8	4.6	5.2	.99	5.7	.00	3.6
25	1.7	1.7	1.6	1.9	1.9	1.7	3.7	4.8	2.1	5.7	.57	3.9
26	1.7	1.7	1.6	2.0	1.9	1.7	2.9	4.5	1.8	7.7	1.0	4.0
27	1.8	1.8	1.7	2.0	1.9	1.7	2.8	4.2	1.1	8.9	3.6	3.4
28	3.4	1.8	1.8	2.0	1.9	1.7	2.9	4.0	1.2	15	38	2.7
29	1.8	3.2	1.9	1.9	---	1.7	2.3	4.4	3.9	9.7	7.9	2.2
30	2.5	4.4	1.9	1.8	---	1.7	1.4	4.3	12	7.8	5.1	1.8
31	3.2	---	1.9	1.6	---	1.7	---	3.1	---	6.6	4.1	---
TOTAL	56.7	100.5	65.8	37.60	130.77	55.5	127.9	119.89	86.91	268.19	227.31	265.2
MEAN	1.83	3.35	2.12	1.21	4.67	1.79	4.26	3.87	2.90	8.65	7.33	8.84
MAX	3.4	5.9	5.2	2.0	50	1.9	12	11	13	73	69	56
MIN	1.6	1.7	1.6	.00	.00	1.7	1.4	.39	.49	.00	.00	1.7
CFSM	.04	.07	.04	.03	.10	.04	.09	.08	.06	.18	.15	.18
IN.	.04	.08	.05	.03	.10	.04	.10	.09	.07	.20	.17	.20
AC-FT	112	199	131	75	259	110	254	238	172	532	451	526

CAL YR 1980 TOTAL 6416.69 MEAN 17.5 MAX 918 MIN .00 CFSM .36 IN 4.84 AC-FT 12730
WTR YR 1981 TOTAL 1542.27 MEAN 4.23 MAX 73 MIN .00 CFSM .09 IN 1.16 AC-FT 3060

06813500 MISSOURI RIVER AT RULO, NB

LOCATION.--Lat 40°03'14", long 95°25'12", in NW1/4 NW1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on downstream end of middle pier of bridge on U.S. Highway 159 at Rulo, 3.2 mi (5.1 km) upstream from Big Nemaha River, and at mile 498.0 (801.3 km).

DRAINAGE AREA.--414,900 mi² (1,074,600 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of Geological Survey. Gage-height record collected at site 80 ft (24 m) upstream January 1886 to December 1899 published in reports of Missouri River Commission September 1929 to September 1950 in files of Kansas City office of Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft (255.188 m) NGVD. Prior to Sept. 13, 1950, nonrecording gage at site 80 ft (24 m) upstream at same datum.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--32 years, 39,530 ft³/s (1,119 m³/s), 28,640,000 acre-ft/yr (35,300 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft³/s (10,100 m³/s) Apr. 22, 1952, gage height, 25.60 ft (7.803 m); minimum daily, 4,420 ft³/s (125 m³/s) Jan. 13, 1957; minimum gage height, 0.65 ft (0.198 m) Jan. 7, 1971, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft (6.98 m), from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 63,200 ft³/s (1,790 m³/s) Aug. 7, gage height, 14.43 ft (4.398 m); minimum daily, 13,500 ft³/s (382 m³/s) Feb. 6; minimum gage height, 3.10 ft (0.945 m) Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40500	39700	30500	22500	20000	23700	44700	38600	37000	41600	36000	39000
2	40600	39400	28300	22700	18400	23300	44400	38600	37200	39400	38000	38800
3	40700	40000	26100	26000	16800	22900	42100	38600	38000	40300	46200	38600
4	40700	41000	23700	24500	16000	22500	41300	40400	38700	39400	41000	38000
5	40700	41400	22600	22100	14500	22000	40900	47000	39300	40200	41600	38300
6	40800	40900	22500	20500	13500	21800	39600	43000	37800	42000	48000	38400
7	40300	40300	23400	19100	14800	21500	38800	40400	37200	40200	56100	39600
8	40500	40900	23900	18400	16700	21300	38700	39000	37500	38000	51000	40100
9	40600	40900	23100	20800	18300	21200	38100	37800	36800	37700	43200	38000
10	40700	40700	22800	20200	19300	21000	37800	37800	36700	37900	40300	37900
11	41200	40600	22600	19200	17800	21000	41100	37800	37700	36000	39700	37400
12	40600	40600	22600	19900	14500	21200	40800	37700	36900	34800	38600	37500
13	40200	41600	22500	19200	15200	21200	37900	38100	37400	34400	38400	37600
14	39900	41500	22500	18700	15400	21200	39100	38500	37900	34300	38400	38000
15	39600	42500	23300	19400	15400	21200	39000	38800	39800	35000	38300	38400
16	40800	43500	23700	20000	19000	20200	37900	38200	44500	37000	38400	38700
17	43700	44500	24100	19900	24200	19700	38000	36800	49500	35600	38600	38400
18	45000	45500	24800	19100	25600	20900	37500	38200	45200	36100	38400	38000
19	43600	44000	25000	18800	27700	21200	37300	40800	41100	37300	38000	38200
20	41700	44000	24600	18700	29400	20900	37500	40200	38300	39500	37800	38500
21	41400	44000	22500	19300	30200	22900	37600	39500	37700	37000	37600	38200
22	41200	44000	19300	19600	30500	26600	37900	39500	38600	36700	37400	38500
23	40500	44000	18100	19000	27100	29100	38600	38700	39200	37000	37200	38400
24	41200	44500	18300	19100	25400	30600	38200	39800	38300	37000	38600	38500
25	41500	44900	18900	19900	24700	34000	37600	39000	38100	36300	38400	41300
26	41000	44200	19700	20700	24300	36000	38000	39200	37900	38300	40100	42500
27	41000	41000	18900	22100	24000	37800	38400	38800	38100	40500	41800	40800
28	41000	37200	17900	22300	23800	39200	38400	37900	37900	39400	40900	39500
29	40800	35100	18700	22200	---	41000	38600	37200	38100	37300	40200	39100
30	40200	32900	19700	22200	---	42600	38900	37000	39000	36900	39900	38900
31	39700	---	21900	21700	---	44400	---	37100	---	36300	39500	---
TOTAL	1271900	1245300	696500	637800	582500	814100	1174700	1210000	1167400	1169400	1257600	1163100
MEAN	41030	41510	22470	20570	20800	26260	39160	39030	38910	37720	40570	38770
MAX	45000	45500	30500	26000	30500	44400	44700	47000	49500	42000	56100	42500
MIN	39600	32900	17900	18400	13500	19700	37300	36800	36700	34300	36000	37400
AC-FT	2523000	2470000	1382000	1265000	1155000	1615000	2330000	2400000	2316000	2320000	2494000	2307000

CAL YR 1980 TOTAL 14146200 MEAN 38650 MAX 73600 MIN 17900 AC-FT 28060000
WTR YR 1981 TOTAL 12390300 MEAN 33950 MAX 56100 MIN 13500 AC-FT 24580000

06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW1/4 NE1/4 sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi (0.8 km) downstream from North Branch, 1.2 mi (1.9 km) east of city square of Clarinda, and 7.5 mi (12.1 km) upstream from East Nodaway River.

DRAINAGE AREA.--762 mi^2 (1,973 km^2).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 960.36 ft (292.718 m) NGVD. Prior to July 5, 1925, and May 28, 1936, to Mar. 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft (152 m) above station. Average daily pumpage was 1.56 ft^3/s (0.044 m^3/s). Pumpage for the 1980 water year corrected to 2.37 ft^3/s (0.067 m^3/s).

COOPERATION.--Average pumpage furnished by Clarinda water works.

AVERAGE DISCHARGE.--51 years (1918-24, 1936-81), 323 ft^3/s (9.147 m^3/s), 5.76 in/yr (146 mm/yr), 234,000 acre-ft/yr (289 hm^3/yr); median of yearly mean discharges, 260 ft^3/s (7.36 m^3/s), 4.6 in/yr (117 mm/yr), 188,000 acre-ft/yr (232 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,100 ft^3/s (881 m^3/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 15,000 ft^3/s (425 m^3/s) on basis of an overflow profile and extended channel rating; minimum daily, 1.0 ft^3/s (0.028 m^3/s) Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft (7.74 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,540 ft^3/s (100 m^3/s) Apr. 12, gage height, 6.12 ft (1.865 m), no peak above base of 5,000 ft^3/s (142 m^3/s); minimum daily, 20 ft^3/s (0.57 m^3/s) Dec. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	68	34	31	30	66	45	59	23	223	78	65
2	32	72	20	35	25	63	39	50	27	102	1050	54
3	27	70	25	32	25	60	38	46	145	70	1270	48
4	22	61	28	31	25	71	55	50	300	62	354	69
5	25	52	58	30	25	92	132	49	117	112	189	207
6	33	44	61	29	25	83	90	51	81	111	144	104
7	32	44	83	28	25	71	66	47	66	73	118	240
8	56	44	134	27	25	56	55	51	60	55	99	246
9	61	41	101	27	25	50	132	48	58	67	86	135
10	62	44	83	27	25	53	111	42	65	44	77	92
11	44	44	67	27	25	51	81	44	52	36	68	72
12	42	42	60	27	25	46	1350	48	53	33	60	60
13	38	40	57	27	30	50	670	51	43	26	57	52
14	38	38	52	30	35	45	296	60	42	21	62	45
15	38	36	59	30	50	44	205	56	160	258	59	38
16	42	44	59	25	80	43	168	50	131	64	61	34
17	50	41	59	25	300	41	151	47	116	56	52	33
18	44	36	50	30	478	36	139	71	74	419	46	34
19	46	36	30	35	286	40	127	101	52	1590	40	35
20	49	40	25	40	174	38	118	74	44	216	37	35
21	45	36	30	45	143	40	116	50	71	109	35	34
22	37	36	35	50	135	46	117	38	52	83	33	30
23	53	40	40	50	106	50	146	129	45	322	36	32
24	66	34	37	50	92	54	151	109	45	76	36	35
25	77	34	35	50	84	48	107	176	45	72	53	53
26	75	34	33	50	76	45	97	77	38	118	56	41
27	67	32	32	50	70	45	91	48	37	174	49	36
28	63	29	31	45	69	42	83	38	35	146	143	34
29	65	29	31	40	---	41	70	35	48	143	262	31
30	75	31	31	30	---	48	62	30	385	99	146	26
31	74	---	31	30	---	51	---	26	---	134	90	---
TOTAL	1511	1272	1511	1083	2513	1609	5108	1851	2510	5114	4946	2050
MEAN	48.7	42.4	48.7	34.9	89.8	51.9	170	59.7	83.7	165	160	68.3
MAX	77	72	134	50	478	92	1350	176	385	1590	1270	246
MIN	22	29	20	25	25	36	38	26	23	21	33	26
CFSM	.06	.06	.06	.05	.12	.07	.22	.08	.11	.22	.21	.09
IN.	.07	.06	.07	.05	.12	.08	.25	.09	.12	.25	.24	.10
AC-FT	3000	2520	3000	2150	4980	3190	10130	3670	4980	10140	9810	4070

CAL YR 1980 TOTAL 68829 MEAN 188 MAX 4740 MIN 20 CFSM .25 IN 3.36 AC-FT 136500
WTR YR 1981 TOTAL 31078 MEAN 85.1 MAX 1590 MIN 20 CFSM .11 IN 1.52 AC-FT 61640

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft^3/s)	131	116	77	118	267	586	422	557	781	324	178	194	312
RUNOFF (INCHES)	0.20	0.17	0.12	0.18	0.36	0.89	0.62	0.84	1.14	0.49	0.27	0.28	5.56
STD. DEVIATION	0.29	0.26	0.13	0.23	0.27	0.80	0.57	0.85	1.36	0.49	0.25	0.34	3.17
PERCENT OF ANNUAL	3.6	3.1	2.2	3.2	6.5	16	11	15	20	8.8	4.9	6.0	----
PRECIP. (INCHES)	2.1	1.2	0.8	0.8	0.9	2.0	2.7	3.9	5.1	3.5	3.8	3.4	30.2

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to September 1978, October 1979 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Suspended-sediment samples at normal flows and winter period are collected below dam 300 ft (91 m) upstream from gage. Samples at higher stages are collected from bridge at gage. Random water temperatures are on file for the 1979 water year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 840 micromhos Dec. 14, 1979; minimum daily, 130 micromhos June 15, 1976.
WATER TEMPERATURES: Maximum daily, 30.0°C Aug. 23, 1976; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 23,800 mg/L Apr. 17, 1978; minimum daily mean, 5 mg/L Dec. 14, 1977, Feb. 24, 1978.
SEDIMENT LOADS: Maximum daily, 991,000 tons (899,000 tonnes) Sept. 2, 1977; minimum daily, 0.23 ton (0.21 tonne) Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 450 micromhos Jan. 4, May 23, 31, June 1; minimum daily, 160 micromhos July 23.
WATER TEMPERATURES: Maximum daily, 28.0°C July 12, Aug. 8; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 16,500 mg/L Apr. 12; minimum daily mean, 5 mg/L Nov. 15, 25.
SEDIMENT LOADS: Maximum daily, 94,700 tons (85,900 tonnes) Apr. 12; minimum daily, 0.53 ton (0.48 tonne) Oct. 4.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	430	420	410	360	390	380	410	450	230	380	400
2	380	430	410	420	380	400	390	400	420	300	200	420
3	400	440	420	430	370	400	390	400	380	320	240	430
4	400	430	410	450	380	390	350	400	230	360	280	420
5	390	440	410	380	380	370	380	390	240	380	380	320
6	380	420	370	370	390	400	350	390	310	350	380	360
7	380	420	380	360	370	400	390	400	400	350	400	300
8	390	420	370	360	360	400	400	400	420	380	420	270
9	400	420	410	360	370	410	370	400	420	340	430	360
10	400	420	410	380	390	400	380	400	440	380	440	400
11	400	420	420	370	370	400	370	400	430	380	420	420
12	390	420	420	380	360	400	280	400	400	390	420	430
13	400	420	420	390	340	400	260	380	420	400	410	440
14	400	420	430	380	380	390	300	380	420	400	400	430
15	380	410	430	320	360	380	320	370	340	260	400	420
16	400	410	420	340	350	380	350	380	340	300	400	420
17	410	410	420	390	320	390	380	380	400	360	400	420
18	400	420	430	340	260	380	400	360	380	380	400	420
19	400	420	440	340	240	380	400	380	400	200	400	400
20	420	420	390	320	260	370	400	410	420	250	420	420
21	410	420	410	340	270	370	410	410	410	300	410	380
22	400	370	420	330	300	360	420	440	400	360	410	390
23	400	400	420	340	320	370	400	450	410	160	410	400
24	400	410	400	320	340	380	390	380	400	320	400	400
25	410	420	410	340	360	370	390	300	400	380	380	340
26	420	400	380	340	370	380	400	320	420	360	360	400
27	420	410	440	340	390	380	410	350	410	300	380	400
28	400	410	430	360	390	390	420	380	400	360	400	410
29	410	410	420	380	---	380	410	420	400	380	240	420
30	420	400	440	360	---	380	410	430	330	400	340	410
31	430	---	430	360	---	380	---	450	---	410	340	---

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	7.0	3.0	3.0	2.0	9.0	11.0	18.0	19.0	24.0	24.0	22.0
2	14.0	7.0	.0	4.0	1.0	4.0	12.5	14.0	22.0	25.0	23.0	21.0
3	8.0	10.0	2.0	4.0	3.0	2.0	16.0	17.0	20.0	25.0	23.0	22.0
4	10.0	9.0	2.0	3.0	1.0	5.0	10.0	19.0	21.0	25.0	25.0	22.0
5	11.0	8.0	6.0	1.0	.0	1.0	7.0	18.0	22.0	25.0	25.0	21.0
6	13.0	9.0	5.0	4.0	1.0	1.0	8.0	16.0	22.0	26.0	25.0	22.0
7	13.0	11.0	5.0	1.0	1.0	2.0	10.0	13.0	23.0	25.0	25.0	22.0
8	14.0	10.0	.0	1.0	.0	3.0	14.0	14.0	24.0	25.0	26.0	19.0
9	14.0	10.0	1.0	1.0	1.0	4.0	12.0	14.0	23.0	25.0	24.0	19.0
10	14.0	7.0	.0	.0	.0	3.0	17.0	9.0	22.0	25.0	22.0	19.0
11	13.0	9.0	1.0	.0	2.0	4.0	18.0	10.0	22.0	26.0	20.0	21.0
12	13.0	7.0	5.0	.0	1.0	7.0	15.0	14.0	22.0	26.0	22.0	21.0
13	10.0	11.0	7.0	1.0	4.0	7.0	17.0	13.0	22.0	26.0	23.0	19.0
14	14.0	5.0	6.0	2.0	5.0	8.0	10.0	12.0	25.0	26.0	23.0	21.0
15	13.0	8.0	5.0	3.0	8.0	8.0	10.0	15.0	19.0	26.0	25.0	19.0
16	15.0	5.0	1.0	.0	4.0	7.0	12.0	16.0	18.0	26.0	23.0	16.0
17	11.0	6.0	3.0	2.0	3.0	7.0	15.0	15.0	20.0	26.0	20.0	18.0
18	12.0	3.0	3.0	3.0	2.0	2.0	15.0	10.0	20.0	25.0	16.0	16.0
19	11.0	2.0	3.0	2.0	7.0	3.0	16.0	10.0	20.0	24.0	17.0	15.0
20	13.0	3.0	2.0	2.0	7.0	3.0	12.0	13.0	21.0	26.0	19.0	16.0
21	10.0	2.0	2.0	1.0	7.0	6.0	15.0	19.0	21.0	25.0	20.0	19.0
22	10.0	4.0	3.0	1.0	5.0	9.0	14.0	17.0	21.0	22.0	20.0	18.0
23	12.0	3.0	4.0	2.0	3.0	7.0	13.0	19.0	22.0	23.0	22.0	16.0
24	7.0	6.0	2.0	5.0	4.0	8.0	12.0	17.0	22.0	25.0	21.0	20.0
25	12.0	4.0	1.0	4.0	9.0	10.0	14.0	19.0	22.0	23.0	22.0	20.0
26	8.0	5.0	4.0	4.0	7.0	11.0	16.0	19.0	22.0	22.0	22.0	22.0
27	7.0	4.0	1.0	1.0	11.0	10.0	19.0	19.0	23.0	23.0	22.0	15.0
28	3.0	4.0	1.0	1.0	11.0	5.0	18.0	21.0	25.0	24.0	22.0	16.0
29	6.0	4.0	1.0	.0	---	16.0	15.0	21.0	24.0	24.0	22.0	20.0
30	6.0	6.0	5.0	.0	---	10.0	15.0	21.0	25.0	23.0	22.0	21.0
31	7.0	---	5.0	2.0	---	13.0	---	22.0	---	23.0	25.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	28	2.3	31	5.7	11	1.0	12	1.0	25	2.0	41	7.3
2	21	1.8	33	6.4	13	.70	7	.66	36	2.4	33	5.6
3	16	1.2	44	8.3	23	1.6	8	.69	60	4.1	26	4.2
4	9	.53	33	5.4	25	1.9	9	.75	50	3.4	34	6.5
5	21	1.4	31	4.4	14	2.2	11	.89	64	4.3	50	12
6	37	3.3	32	3.8	14	2.3	14	1.1	57	3.8	31	6.9
7	84	4.7	60	8.9	84	19	16	1.2	50	3.4	22	4.2
8	84	9.7	50	5.9	204	74	19	1.4	21	1.4	19	2.9
9	75	12	52	5.8	106	29	20	1.5	47	3.2	18	2.4
10	70	12	36	4.2	41	9.2	22	1.6	43	2.9	14	2.0
11	40	4.8	31	3.7	25	4.5	23	1.7	55	3.7	19	2.6
12	21	2.4	37	4.2	19	3.1	24	1.7	65	4.4	17	2.1
13	43	4.4	33	3.6	15	2.3	24	1.7	59	4.8	13	1.8
14	73	7.5	14	1.4	14	2.0	22	1.8	69	6.5	11	1.3
15	75	7.7	6	.58	17	2.7	23	1.9	85	11	12	1.4
16	40	4.5	6	.95	16	2.5	34	2.3	123	27	10	1.2
17	62	8.4	10	1.1	17	2.7	49	3.3	800	648	16	1.8
18	37	4.4	12	1.2	17	2.3	39	3.2	1820	2350	10	.97
19	29	3.6	12	1.2	27	2.2	66	6.2	1130	873	13	1.4
20	33	4.4	17	1.8	149	10	22	2.4	530	249	9	.92
21	53	6.4	13	1.3	235	19	11	1.3	299	115	8	.86
22	59	5.9	29	2.8	110	10	16	2.2	285	104	10	1.2
23	47	6.7	38	4.1	46	5.0	39	5.3	194	56	11	1.5
24	24	4.3	10	.92	28	2.8	22	3.0	122	30	14	2.0
25	21	4.4	6	.55	43	4.1	13	1.8	80	18	15	1.9
26	13	2.6	8	.73	38	3.4	14	1.9	76	16	17	2.1
27	22	4.0	8	.69	20	1.7	16	2.2	111	21	17	2.1
28	22	3.7	9	.70	14	1.2	15	1.8	66	12	26	2.9
29	20	3.5	12	.94	19	1.6	16	1.7	---	---	25	2.8
30	28	5.7	10	.84	45	3.8	16	1.3	---	---	15	1.9
31	45	9.0	---	---	61	5.1	28	2.0	---	---	19	2.6
TOTAL	---	157.23	---	89.10		232.90	---	61.49	---	4580.3	---	91.35

06817000 NODAWAY RIVER AT CLARINDA, IA-Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	13	1.6	24	3.8	64	5.2	2740	1650	170	35	66	12
2	23	2.4	13	1.8	93	6.8	500	138	2580	9210	47	5.9
3	36	3.7	14	1.7	3080	3370	226	43	2720	10500	42	5.4
4	131	19	16	2.2	10400	9390	178	30	900	860	95	18
5	163	58	17	2.2	2580	615	319	96	312	159	608	407
6	135	33	21	2.9	540	140	415	124	153	59	142	40
7	103	18	22	2.8	302	54	202	40	95	30	866	631
8	92	14	24	3.3	200	32	123	18	52	14	670	525
9	405	166	28	3.6	167	26	128	23	40	9.3	155	56
10	665	175	16	1.8	157	28	100	12	43	8.9	95	24
11	180	39	14	1.7	110	15	75	7.3	30	5.5	92	18
12	16600	94700	31	4.0	133	19	76	6.8	32	5.2	62	10
13	8000	14600	25	3.4	134	16	88	6.2	33	5.1	66	9.3
14	2180	1720	26	4.2	120	14	72	4.1	25	4.2	65	7.9
15	665	363	33	5.0	1250	594	2420	2890	33	5.3	39	4.0
16	370	168	22	3.0	520	219	302	52	45	7.4	28	2.6
17	233	95	20	2.5	348	109	162	24	40	5.6	14	1.2
18	180	68	54	10	250	50	1940	8500	44	5.5	21	1.9
19	130	45	59	16	172	24	4540	23300	38	4.1	28	2.6
20	102	32	47	9.4	159	19	790	461	29	2.9	36	3.4
21	85	27	24	3.2	380	73	190	56	32	3.0	44	4.0
22	82	26	27	2.8	218	31	96	22	29	2.6	43	3.5
23	127	50	2110	1380	160	19	1720	1500	38	3.7	40	3.5
24	260	106	720	2160	140	17	150	31	45	4.4	43	4.1
25	153	44	4140	1970	132	16	77	15	70	10	75	11
26	75	20	1230	256	110	11	152	48	74	11	45	5.0
27	60	16	500	78	130	13	1140	536	44	5.8	34	3.3
28	52	12	320	33	179	17	187	74	447	293	48	4.4
29	42	7.9	215	20	2980	386	129	50	649	573	39	3.3
30	32	5.4	142	12	---	---	88	24	168	66	55	3.9
31	---	---	97	6.8	---	---	690	250	117	28	---	---
TOTAL	---	112534.0	---	6007.1	---	15529.0	---	40031.4	---	21937.5	---	1832.2

TOTAL LOAD FOR YEAR: 203083.57 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
FEB							
17...	1415	--	440	957	1140	46	50
APR							
02...	0930	12.0	40	26	2.8	--	--
12...	0900	15.0	2740	35400	262000	48	52
14...	0830	10.0	288	2260	1570	66	75
JUL							
15...	0800	26.0	283	5620	4290	56	62
AUG							
02...	0800	23.0	557	5200	9220	51	56
13...	0930	22.0	54	30	4.4	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB						
17...	55	70	--	--	--	96
APR						
02...	--	--	--	--	--	84
12...	54	69	99	99	100	--
14...	87	95	--	--	--	100
JUL						
15...	66	77	--	--	--	100
AUG						
02...	59	68	--	--	--	98
13...	--	--	--	--	--	95

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
20...	1420	47	3	1	1	19	69
APR							
02...	0930	40	3	1	2	9	63
MAY							
21...	1215	51	3	1	1	6	82
JUN							
25...	0830	50	2	1	1	7	29
AUG							
13...	0930	54	5	6	7	8	22
SEP							
22...	0925	29	5	4	5	11	39

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
20...	88	94	97	99	100	--
APR						
02...	77	82	87	91	99	100
MAY						
21...	84	91	94	96	98	100
JUN						
25...	44	55	65	79	91	100
AUG						
13...	61	74	80	88	96	100
SEP						
22...	58	66	72	81	91	100

06818750 PLATTE RIVER NEAR DIAGONAL, IA

LOCATION.--Lat 40°45'02", long 94°24'46", in NE1/4 NW1/4 sec.22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, on left bank at downstream side of bridge on county highway, 2.2 mi (3.5 km) upstream from Turkey Creek, 4.6 mi (7.4 km) southwest of Diagonal, and 4.9 mi (7.9 km) downstream from Gard Creek.

DRAINAGE AREA.--217 mi² (562 km²).

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--WSP 2119: 1969 (P).

GAGE.--Water-stage recorder. Datum of gage is 1,095.27 ft (333.838 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years, 117 ft³/s (3.313 m³/s), 7.32 in/yr (186 mm/yr), 84,770 acre-ft/yr (105 hm³/yr); median of yearly mean discharges, 100 ft³/s (2.83 m³/s), 6.3 in/yr (160 mm/yr), 72,400 acre-ft/yr (89.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,420 ft³/s (182 m³/s) Oct. 12, 1973, gage height, 23.24 ft (7.084 m); minimum daily, 0.21 ft³/s (0.006 m³/s) Jan. 14, 15, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1967 reached a stage of 23.16 ft (7.059 m), from floodmark by local resident, discharge, 6,360 ft³/s (180 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,150 ft³/s (60.9 m³/s) Apr. 12, gage height, 13.03 ft (3.972 m), no peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 1.8 ft³/s (0.051 m³/s) Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	15	4.8	6.0	5.0	12	7.3	13	12	32	8.4	19
2	3.1	13	3.0	5.5	3.0	10	6.0	12	11	16	370	15
3	2.8	9.7	4.0	5.5	3.0	8.6	5.0	11	12	13	392	12
4	3.1	7.8	4.5	5.0	3.0	12	5.3	11	10	130	83	11
5	6.1	8.9	4.1	5.0	3.0	29	6.0	11	9.7	89	44	26
6	3.2	7.9	3.1	4.5	3.0	25	6.3	12	8.8	33	32	16
7	2.7	6.7	14	4.5	3.0	18	5.3	11	8.3	21	24	54
8	2.9	6.1	130	4.0	3.0	14	4.8	11	7.4	16	19	190
9	2.8	5.8	20	4.0	3.0	12	7.7	11	6.7	15	14	42
10	2.8	5.2	18	4.0	3.0	11	10	11	7.1	15	11	26
11	2.2	6.4	17	4.0	3.0	9.9	38	11	6.6	10	9.7	20
12	1.8	8.7	16	4.0	3.0	12	1060	11	8.9	8.4	8.4	15
13	2.3	6.6	15	4.5	4.0	9.6	437	12	7.2	7.3	8.0	12
14	2.6	10	14	5.0	6.0	10	218	21	5.9	6.6	8.8	11
15	1.9	15	15	5.0	10	8.4	113	29	27	7.7	9.7	9.7
16	4.3	11	15	4.0	20	7.7	78	18	118	20	8.0	10
17	6.4	8.3	14	4.0	50	7.3	68	15	44	16	6.6	8.0
18	8.0	8.9	13	4.5	40	7.3	51	28	27	23	5.6	7.7
19	4.0	6.8	8.0	5.0	30	7.0	43	113	19	18	5.0	7.3
20	2.5	6.8	4.0	6.0	27	6.6	40	66	16	15	4.8	6.6
21	2.3	6.2	4.0	7.0	26	6.3	36	40	14	11	4.5	5.6
22	2.5	6.2	5.0	8.0	20	9.2	35	30	15	8.0	4.5	5.6
23	2.9	6.2	5.0	10	18	12	39	39	16	7.0	4.5	5.0
24	9.8	6.1	4.0	11	14	9.2	28	63	11	5.6	4.8	5.3
25	13	7.3	4.0	11	11	8.0	22	34	14	6.6	5.3	11
26	6.6	7.6	4.0	11	11	9.2	19	25	14	8.4	8.4	19
27	6.7	5.0	4.0	11	11	8.8	18	21	9.2	13	25	9.8
28	12	5.5	4.0	10	12	8.0	16	18	8.4	53	28	6.8
29	20	4.9	4.5	9.0	---	8.0	16	18	16	32	324	6.3
30	16	4.8	5.0	6.0	---	9.2	14	16	71	16	61	10
31	11	---	6.0	5.0	---	8.8	---	13	---	12	28	---
TOTAL	171.6	234.0	386.0	193.0	348.0	334.1	2452.7	755	561.2	584.6	1570.0	602.7
MEAN	5.54	7.80	12.5	6.23	12.4	10.8	81.8	24.4	18.7	22.1	50.6	20.1
MAX	20	15	130	11	50	29	1060	113	118	130	392	190
MIN	1.8	4.8	3.0	4.0	3.0	6.3	4.8	11	5.9	5.6	4.5	5.0
CFSM	.03	.04	.06	.03	.06	.05	.38	.11	.09	.10	.23	.09
IN.	.03	.04	.07	.03	.06	.06	.42	.13	.10	.12	.27	.10
AC-FT	340	464	766	383	690	663	4860	1500	1110	1360	3110	1200

CAL YR 1980 TOTAL 22249.2 MEAN 60.8 MAX 3170 MIN 1.4 CFSM .28 IN 3.81 AC-FT 44130
WTR YR 1981 TOTAL 8292.9 MEAN 22.7 MAX 1060 MIN 1.8 CFSM .11 IN 1.42 AC-FT 16450

06819190 EAST FORK ONE HUNDRED AND TWO RIVER NEAR BEDFORD, IA

LOCATION.--Lat 40°38'01", long 94°44'41", in NE1/4 NE1/4 sec.9, T.67 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway J55, 0.4 mi (0.6 km) upstream from Daugherty Creek, and 2.8 mi (4.5 km) southwest of junction of U.S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.--92.1 mi² (238.5 km²).

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,057.51 ft (322.329 m) NGVD (levels by Corps of Engineers). Prior to Oct. 1, 1968, at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records fair except those for winter period, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 50.7 ft³/s (1.436 m³/s), 7.48 in/yr (190 mm/yr), 36,730 acre-ft/yr (45.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,980 ft³/s (283 m³/s) Oct. 11, 1973, gage height, 20.72 ft (6.315 m); maximum gage height, 20.95 ft (6.386 m) Jan. 12, 1960, present datum; no flow at times in 1966-68, 1972, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft³/s (59.8 m³/s) Apr. 11, gage height, 8.45 ft (2.576 m³/s), from floodmark, at 1700 hrs, no other peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 0.35 ft³/s (0.010 m³/s) Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	.82	1.0	3.5	2.0	7.0	3.5	5.2	3.0	7.8	33	4.3
2	.49	.82	.94	4.0	1.5	7.0	3.2	4.6	19	3.0	313	2.5
3	.49	.62	.62	4.0	1.0	7.0	2.5	4.6	7.5	2.3	61	1.9
4	.50	.62	.56	3.0	1.0	10	1.7	4.8	3.5	2.7	20	2.5
5	.45	.62	.56	2.5	1.0	17	1.6	6.1	2.8	2.4	17	2.4
6	.46	.62	.75	2.0	1.0	14	1.5	4.6	2.0	1.9	6.6	4.3
7	.42	.68	15	2.0	1.0	10	1.4	4.2	2.1	1.5	5.0	102
8	.56	.65	80	2.0	1.0	8.0	1.3	4.6	1.9	1.5	3.7	17
9	.62	.82	20	2.0	1.0	6.0	1.2	4.8	2.9	1.8	3.2	5.1
10	.56	.82	10	2.0	1.0	5.5	1.2	4.6	1.9	1.8	2.1	3.0
11	.62	.82	9.0	2.0	1.0	5.0	438	4.4	1.9	1.2	2.1	1.9
12	.56	.82	9.0	2.0	1.0	4.8	156	4.6	38	.98	2.1	1.4
13	.68	1.1	8.0	2.0	1.5	4.6	42	5.2	5.6	.90	2.2	1.1
14	.68	1.3	8.0	2.5	2.0	4.4	95	11	2.0	.95	2.7	.93
15	.62	1.1	10	2.5	4.0	4.4	40	8.4	87	5.6	2.5	.68
16	.90	1.1	8.4	2.0	8.0	4.6	21	5.6	22	2.4	1.8	.66
17	1.1	1.1	8.4	2.0	15	4.0	17	5.4	5.4	1.4	1.4	.64
18	.68	.98	8.4	2.0	30	4.0	14	13	3.9	40	1.3	.66
19	.50	.89	5.0	2.0	14	4.0	14	26	2.9	78	1.2	.63
20	.62	1.1	1.0	2.5	12	3.9	18	15	2.8	8.1	1.1	.54
21	.56	1.3	1.5	2.5	12	3.7	15	9.4	8.7	4.5	1.1	.60
22	.42	1.1	2.0	3.0	11	4.4	16	7.9	4.4	2.5	1.1	.46
23	.90	1.1	3.0	3.0	10	4.8	18	30	2.8	147	2.5	.35
24	1.1	.97	2.5	3.5	10	4.8	12	73	1.9	12	3.6	.62
25	.68	.90	2.0	3.5	9.0	8.4	8.8	12	1.6	12	7.6	56
26	.62	.90	2.0	4.0	9.0	4.8	10	7.8	1.6	33	52	8.2
27	1.6	.86	2.0	4.0	8.0	4.4	7.6	5.8	1.9	52	19	1.9
28	1.1	.60	2.0	3.5	8.0	3.7	6.6	4.8	1.9	41	6.8	.76
29	1.1	1.2	2.0	3.0	---	4.6	6.1	4.8	2.0	10	15	.63
30	.98	1.1	2.5	2.5	---	5.6	5.4	4.0	24	5.8	39	.56
31	.82	---	3.0	2.0	---	4.0	---	3.4	---	135	11	---
TOTAL	21.89	27.43	229.13	83.0	177.0	188.4	979.6	309.6	268.9	621.13	641.7	224.22
MEAN	.71	.91	7.39	2.68	6.32	6.08	32.7	9.99	8.96	20.0	20.7	7.47
MAX	1.6	1.3	80	4.0	30	17	438	73	87	147	313	102
MIN	.42	.60	.56	2.0	1.0	3.7	1.2	3.4	1.6	.90	1.1	.35
CFSM	.008	.01	.08	.03	.07	.07	.36	.11	.10	.22	.23	.08
IN.	.01	.01	.09	.03	.07	.08	.40	.13	.11	.25	.26	.09
AC-FT	43	54	454	165	351	374	1940	614	533	1230	1270	445

CAL YR 1980 TOTAL 14160.03 MEAN 38.7 MAX 3690 MIN .42 CFSM .42 IN 5.72 AC-FT 28090
WTR YR 1981 TOTAL 3772.00 MEAN 10.3 MAX 438 MIN .35 CFSM .11 IN 1.52 AC-FT 7480

06897950 ELK CREEK NEAR DECATUR CITY, IA
(Hydrologic bench-mark station)

LOCATION.--Lat 40°43'18", long 93°56'12", near the southeast corner sec.34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at right downstream corner of bridge on county highway, 1,000 ft (305 m) downstream from West Elk Creek, 5.2 mi (8.4 km) upstream from mouth, and 5.7 mi (9.2 km) southwest of Decatur City.

DRAINAGE AREA.--52.5 mi² (136 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 924.70 ft (281.849 m) NGVD. Oct. 1, 1967, to Sept. 30, 1974, at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--14 years, 28.4 ft³/s (0.804 m³/s), 7.35 in/yr (187 mm/yr), 20,580 acre-ft/yr (25.4 hm³/yr); median of yearly discharges, 23 ft³/s (0.65 m³/s), 5.9 in/yr (150 mm/yr), 16,700 acre-ft/yr (20.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s (464 m³/s) June 2, 1980, gage height, 28.22 ft (8.601 m), from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backwater computation; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1967, reached a stage of 18.35 ft (5.593 m), datum in use prior to Oct. 1, 1974, discharge, 17,800 ft³/s (504 m³/s), estimated from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backward computation. Flood of Aug. 6, 1959, reached a stage between 20.5 and 22.5 ft (6.25 and 6.86 m), datum in use prior to Oct. 1, 1974, 300 ft (91 m) downstream, from information by assistant county engineer, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 12	0200	746	21.1	14.82	4.517	Apr. 13	2300	*3,450	97.7	*19.61	5.977

Minimum daily discharge, 0.03 ft³/s (0.001 m³/s) Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.46	.84	2.0	1.0	1.6	3.6	6.2	1.4	17	2.9	3.5
2	.14	.42	.76	1.8	.84	1.4	2.9	6.8	1.5	15	8.0	1.3
3	.10	.44	.72	2.2	.72	1.2	4.8	5.1	3.6	21	6.7	.97
4	.09	.52	.76	1.7	.68	6.4	19	3.5	3.2	35	4.0	1.1
5	.08	.48	1.0	1.2	.66	7.4	6.8	3.1	2.8	7.0	3.1	1.2
6	.10	.48	1.7	1.2	.64	4.4	4.4	3.0	2.1	3.3	3.0	.28
7	.12	.53	52	1.3	.62	2.9	4.9	2.9	1.7	2.8	3.3	2.5
8	.10	.59	109	1.3	.60	2.7	5.1	3.1	1.5	3.3	2.7	1.1
9	.10	.63	9.4	1.2	.60	3.8	4.7	4.0	1.7	4.4	2.5	.18
10	.08	.68	3.0	1.0	.58	4.0	15	3.8	1.4	5.0	4.2	.14
11	.04	.67	1.6	.77	.56	4.6	64	3.1	1.5	6.0	5.9	.18
12	.03	.87	1.5	.64	.53	5.0	134	3.7	3.5	6.2	6.0	.16
13	.04	.89	.93	.56	.52	5.3	500	5.4	2.0	6.3	6.1	.12
14	.05	1.6	.70	.48	.62	4.3	239	13	1.3	5.7	8.2	.13
15	.09	1.6	.58	.44	1.8	5.6	19	4.1	65	10	14	.11
16	.24	1.2	.52	.41	7.0	4.4	11	3.1	20	10	12	.09
17	.42	1.1	.68	.40	21	4.3	8.2	3.7	7.1	21	10	.11
18	.23	.88	.85	.39	19	3.7	4.4	13	8.0	12	8.3	.10
19	.19	.90	.54	.49	5.4	2.7	7.7	10	7.5	51	6.0	.12
20	.16	1.0	.35	.70	2.2	2.9	6.5	4.6	12	7.9	4.6	.18
21	.17	1.1	.25	.94	2.1	3.9	4.4	3.5	20	4.1	3.8	.26
22	.17	1.1	.22	1.4	4.0	6.3	5.5	13	21	3.5	3.3	.28
23	.23	1.3	.20	1.9	2.3	3.8	4.3	60	18	3.1	2.9	.32
24	.30	1.4	.18	2.2	.90	3.5	2.3	24	17	2.8	2.9	.29
25	.25	1.0	.17	2.5	.88	4.0	2.4	2.7	21	2.4	3.5	.67
26	.16	.92	.16	3.1	.86	4.4	3.5	.93	17	1.6	3.9	1.1
27	.47	.88	.26	2.9	1.5	4.2	4.5	.52	17	6.1	5.7	1.2
28	.79	.92	.35	2.6	1.7	3.8	4.9	.95	20	5.7	13	1.2
29	.39	1.0	.54	2.3	---	6.9	5.8	1.4	31	2.9	7.2	1.3
30	.38	.92	.76	1.8	---	6.4	5.5	1.5	35	2.8	6.4	1.1
31	.44	---	1.1	1.3	---	4.8	---	1.7	---	2.6	6.4	---
TOTAL	6.30	26.28	191.62	43.12	79.81	130.6	1108.1	215.40	365.8	287.5	180.5	21.31
MEAN	.20	.88	6.18	1.39	2.85	4.21	36.9	6.95	12.2	9.27	5.82	.71
MAX	.79	1.6	109	3.1	21	7.4	500	60	65	51	14	3.5
MIN	.03	.42	.16	.39	.52	1.2	2.3	.52	1.3	1.6	2.5	.09
CFSM	.004	.02	.12	.03	.05	.08	.70	.13	.23	.18	.11	.01
IN.	.00	.02	.14	.03	.06	.09	.79	.15	.26	.20	.13	.02
AC-FT	12	52	380	86	158	259	2200	427	726	570	358	42

CAL YR 1980 TOTAL 8004.32 MEAN 21.9 MAX 3310 MIN .01 CFSM .42 IN 5.67 AC-FT 15880
WTR YR 1981 TOTAL 2656.34 MEAN 7.28 MAX 500 MIN .03 CFSM .14 IN 1.88 AC-FT 5270

06897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

REMARKS.--Miscellaneous biological data collected September 1970 to September 1972 are available in the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT												
09...	0830	1.2	560	7.8	14.0	--	--	K44	230	310	49	94
NOV												
18...	1445	1.0	570	7.6	3.0	11.8	89	170	K3200	250	30	76
JAN												
07...	0915	1.3	674	8.0	.0	12.3	86	K20	900	370	89	110
FEB												
10...	1530	.56	620	7.4	.0	--	--	K28	110	360	81	110
MAR												
24...	1700	3.4	510	7.8	12.0	--	--	K20	K50	250	--	74
MAY												
05...	1700	3.1	620	8.0	19.0	10.0	111	350	490	300	--	89
JUN												
09...	1230	1.7	620	7.7	24.5	6.7	81	--	1600	280	--	80
JUL												
28...	1730	7.7	394	7.8	20.0	8.2	91	K110000	--	130	--	37

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT											
09...	18	10	6	.3	4.5	260	46	12	.3	7.9	361
NOV											
18...	17	10	8	.3	5.7	--	47	15	.3	8.2	339
JAN											
07...	23	15	8	.3	4.3	--	78	12	.3	13	421
FEB											
10...	21	14	8	.3	3.2	--	72	11	.2	11	408
MAR											
24...	17	12	9	.3	2.6	--	76	10	.2	2.6	334
MAY											
05...	19	13	8	.3	4.4	--	71	8.6	.2	7.8	365
JUN											
09...	19	13	9	.3	6.5	--	65	12	.3	6.2	360
JUL											
28...	8.6	5.8	8	.2	7.5	--	1.0	9.0	.5	8.9	214

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT											
09...	350	.49	1.1	.00	.00	.050	.010	.03	21	.07	44
NOV											
18...	318	.46	.92	.11	.12	.060	--	--	17	.05	86
JAN											
07...	426	.57	1.4	.49	.48	.070	--	--	52	.18	--
FEB											
10...	430	.55	.63	.35	.35	.070	--	--	13	.02	69
MAR											
24...	315	.45	3.1	.04	.04	.050	--	--	36	.34	50
MAY											
05...	364	.50	3.1	.06	.07	.080	--	--	47	.40	38
JUN											
09...	347	.49	1.7	.07	.09	.100	--	--	70	.33	90
JUL											
28...	156	.29	4.4	2.2	1.3	.370	--	--	222	4.6	100

K Results based on colony count outside the acceptable range (non-ideal colony count).

06897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	CYANIDE TOTAL (MG/L AS CN) (00720)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)
OCT							
09...	0830	.00	2	200	0	0	19
MAY							
05...	1700	.00	2	100	0	10	4

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT							
09...	220	12	600	.1	0	0	60
MAY							
05...	440	4	220	.4	0	0	40

06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE1/4 SE1/4 sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft (5 m) downstream from bridge on U.S. Highway 69 at Davis City, 2.6 mi (4.2 km) upstream from Dickersons Branch, and 5.2 mi (8.4 km) upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi² (1,816 km²).

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1926 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft (266.407 m) NGVD. May 14, 1918, to July 2, 1925, July 14, 1941, to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942, to Feb. 8, 1967, water-stage recorder at same site at datum 2.00 ft (0.61 m) higher.

REMARKS.-- Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--46 years (1918-24, 1941-81), 361 ft³/s (10.22 m³/s), 6.99 in/yr (178 mm/yr), 261,500 acre-ft/yr (322 hm³/yr); median of yearly mean discharges, 300 ft³/s (8.5 m³/s), 5.8 in/yr (150 mm/yr), 217,000 acre- ft/yr (270 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s (688 m³/s) June 10, 1974, gage height, 19.43 ft (5.922 m), from rating curve extended above 17,000 ft³/s (481 m³/s) on basis of velocity-area study; minimum daily, 0.1 ft³/s (0.003 m³/s) June 25, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft (6.95 m), datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft³/s (850 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 14	0300	*5,420	153	8.06	2.457	July 5	1130	5,340	151	7.99	2.435

Minimum daily discharge, 8.0 ft³/s (0.23 m³/s) Jan. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	49	11	28	17	40	42	63	40	96	63	67
2	13	45	10	27	15	37	34	56	36	89	55	43
3	12	52	13	26	14	28	28	52	35	91	59	33
4	10	46	16	24	13	27	115	50	32	2140	219	29
5	10	46	17	23	13	61	134	49	31	4470	238	25
6	9.8	49	22	22	12	78	65	50	36	878	120	23
7	9.8	46	110	21	12	50	46	46	41	340	87	28
8	10	40	1750	19	11	36	40	43	514	215	68	35
9	9.8	33	579	15	10	31	38	43	477	158	58	87
10	9.4	27	249	13	10	28	38	43	219	125	49	87
11	9.4	28	170	11	9.4	25	358	40	120	108	42	63
12	8.9	27	138	9.6	9.1	24	701	40	78	89	37	42
13	9.2	29	116	9.0	9.0	21	2420	41	61	76	34	31
14	9.4	31	90	8.6	9.1	18	4270	70	46	67	34	24
15	9.4	36	86	8.4	9.2	15	1200	78	194	117	31	21
16	11	56	80	8.2	24	14	514	65	435	85	29	18
17	12	46	74	8.1	48	13	372	58	381	58	28	16
18	12	23	66	8.0	170	13	286	65	242	76	29	15
19	12	22	58	13	150	15	234	82	117	131	27	14
20	13	22	52	16	140	16	222	78	80	286	24	13
21	12	21	46	19	187	19	180	74	63	143	21	13
22	15	21	38	21	164	28	161	65	56	87	21	13
23	22	19	33	22	222	32	158	720	70	65	19	12
24	26	18	30	24	149	35	164	1210	56	52	20	12
25	28	18	27	26	108	36	134	335	59	43	21	16
26	33	18	25	28	82	36	120	143	158	42	22	15
27	34	16	25	29	61	43	103	110	105	67	24	14
28	55	15	26	31	49	45	89	85	61	201	53	15
29	87	12	28	33	---	45	80	67	82	187	70	16
30	68	12	30	25	---	52	72	56	219	105	201	16
31	55	---	29	21	---	55	---	46	---	89	115	---
TOTAL	649.1	923	4044	596.9	1726.8	1016	12418	4023	4144	10776	1918	856
MEAN	20.9	30.8	130	19.3	61.7	32.8	414	130	138	348	61.9	28.5
MAX	87	56	1750	33	222	78	4270	1210	514	4470	238	87
MIN	8.9	12	10	8.0	9.0	13	28	40	31	42	19	12
CFSM	.03	.04	.19	.03	.09	.05	.59	.19	.20	.50	.09	.04
IN.	.03	.05	.21	.03	.09	.05	.66	.21	.22	.57	.10	.05
AC-FT	1290	1830	8020	1180	3430	2020	24630	7980	8220	21370	3800	1700

CAL YR 1980 TOTAL 67912.3 MEAN 186 MAX 7310 MIN 8.9 CFSM .27 IN 3.60 AC-FT 134700
WTR YR 1981 TOTAL 43090.8 MEAN 118 MAX 4470 MIN 8.0 CFSM .17 IN 2.29 AC-FT 85470

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	141	164	95	190	321	640	601	602	709	290	173	206	344
RUNOFF (INCHES)	0.23	0.26	0.16	0.31	0.48	1.05	0.96	0.99	1.13	0.48	0.28	0.33	6.66
STD. DEVIATION	0.46	0.54	0.24	0.55	0.44	0.91	0.95	0.94	1.50	0.63	0.51	0.60	3.87
PERCENT OF ANNUAL	3.5	3.9	2.4	4.7	7.2	16	14	15	17	7.2	4.2	5.0	----
PRECIP. (INCHES)	2.4	1.3	1.2	1.0	0.9	2.0	3.1	3.8	4.9	3.4	3.8	3.8	31.7

06898400 WELDON RIVER NEAR LEON, IA

LOCATION.--Lat 40°41'48", long 93°38'07", in NE1/4 NE1/4 sec.17, T.68 N., R.24 W., Decatur County, Hydrologic Unit 10280102, on left bank 10 ft (3 m) downstream from bridge on county highway A, 200 ft (61 m) upstream from unnamed creek, 1.3 mi (2.1 km) downstream from Brush Creek, and 6.5 mi (10.5 km) southeast of post office at Leon.

DRAINAGE AREA.--104 mi² (269 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 906.26 ft (276.228 m) NGVD.

REMARKS.--Records good except those for winter period and those for periods of missing gage height Apr. 12 to May 2, June 11-21,25,26, Aug. 5,6,8-10, Sept. 9-26, 28-30 which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 72.0 ft³/s (2.039 m³/s), 9.40 in/yr (239 mm/yr), 52,160 acre-ft/yr (64.3 hm³/yr); median of yearly mean discharges, 54 ft³/s (1.53 m³/s), 7.1 in/yr (180 mm/yr), 39,100 acre-ft/yr (48 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,600 ft³/s (1,376 m³/s) Aug. 6, 1959, gage height, 25.27 ft (7.702 m), from rating curve extended above 5,600 ft³/s (159 m³/s) on basis of contracted-opening and flow-over-embankment measurement at gage height 25.27 ft (7.702 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage and discharge of the flood of Aug. 6, 1959 are the greatest since at least 1919.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,700 ft³/s (246 m³/s) July 4, gage height, 20.17 (6.148 m) at 1145 hours, no other peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 0.66 ft³/s (0.019 m³/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	32	1.4	5.5	2.9	15	7.8	7.4	14	16	88	2.5
2	5.3	17	1.3	5.4	2.7	13	7.2	7.0	14	8.5	74	2.5
3	4.7	11	1.2	5.0	2.7	11	7.4	6.4	13	77	59	2.8
4	3.6	9.9	1.1	4.7	2.6	20	18	6.4	13	5360	45	2.7
5	3.1	9.3	1.3	4.6	2.6	61	11	5.9	13	280	39	2.3
6	1.9	7.2	2.0	4.5	2.6	30	8.7	5.6	12	114	20	2.0
7	1.6	7.6	29	4.3	2.5	19	7.8	5.0	12	75	3.7	3.0
8	1.2	6.8	560	4.0	2.5	15	7.6	4.4	553	57	3.3	2.3
9	1.3	5.3	190	3.7	2.6	14	7.6	4.2	38	57	2.6	2.4
10	1.9	5.9	42	3.4	2.5	13	49	4.2	11	42	1.9	1.5
11	2.7	5.5	24	3.1	2.3	12	205	3.6	14	38	4.7	1.2
12	3.8	5.8	19	2.9	2.2	12	700	3.9	77	34	4.2	1.1
13	6.1	5.9	17	2.8	2.3	11	350	7.2	33	30	3.8	1.0
14	7.2	8.0	14	2.9	2.5	9.6	2300	29	11	28	5.9	.88
15	9.6	9.9	13	2.8	5.6	9.6	250	13	900	362	3.8	.80
16	14	6.6	12	2.8	42	9.3	80	7.8	600	101	3.5	.76
17	12	6.1	11	2.6	50	8.7	40	7.2	90	57	3.3	.72
18	19	6.3	9.8	2.7	49	8.5	30	45	35	47	3.0	.66
19	22	6.1	9.4	3.0	32	7.8	24	39	20	203	2.9	.74
20	26	6.1	8.6	3.3	21	7.6	25	15	14	263	2.9	1.0
21	29	5.2	8.4	3.8	19	8.3	20	10	28	51	2.8	1.2
22	26	5.2	7.7	4.0	46	10	18	9.6	40	26	2.7	1.0
23	29	5.0	7.2	3.9	83	9.3	24	200	21	36	2.8	.90
24	77	4.5	6.9	3.7	29	8.5	17	287	6.3	35	5.5	1.1
25	28	3.6	6.4	3.8	22	8.7	15	51	400	31	5.5	2.5
26	9.0	1.5	6.2	3.7	19	9.3	13	29	45	38	4.7	3.0
27	48	1.5	6.0	3.6	19	9.0	11	22	5.9	131	3.9	5.8
28	109	1.4	5.8	3.3	19	8.3	10	19	5.6	138	3.1	3.5
29	66	1.4	5.9	3.2	---	9.9	8.8	18	5.3	40	3.1	2.5
30	57	1.5	5.6	3.2	---	11	8.2	15	77	56	2.9	1.6
31	74	---	5.5	3.1	---	9.3	---	14	---	80	2.7	---
TOTAL	706.2	209.1	1038.7	113.3	491.1	408.7	4281.3	901.8	3121.1	7911.5	414.2	55.96
MEAN	22.8	6.97	33.5	3.65	17.5	13.2	143	29.1	104	255	13.4	1.87
MAX	109	32	560	5.5	83	61	2300	287	900	5360	88	5.8
MIN	1.2	1.4	1.1	2.6	2.2	7.6	7.2	3.6	5.3	8.5	1.9	.66
CFSM	.22	.07	.32	.04	.17	.13	1.38	.28	1.00	2.45	.13	.02
IN.	.25	.07	.37	.04	.18	.15	1.53	.32	1.12	2.83	.15	.02
AC-FT	1400	415	2060	225	974	811	8490	1790	6190	15690	822	111

CAL YR 1980 TOTAL 24948.53 MEAN 68.2 MAX 5390 MIN .01 CFSM .66 IN 8.92 AC-FT 49490
WTR YR 1981 TOTAL 19652.96 MEAN 53.8 MAX 5360 MIN .66 CFSM .52 IN 7.03 AC-FT 38980

06903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW1/4 NE1/4 sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft (5 m) downstream from bridge on county highway S43, 0.4 mi (0.6 km) downstream from Wolf Creek, and 5.0 mi (8.0 km) southeast of Chariton.

DRAINAGE AREA.--182 mi^2 (471 km^2).

PERIOD OF RECORD.--October 1965 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water-stage recorder. Datum of gage is 917.96 ft (279.794 m) NGVD (levels by U.S. Weather Bureau from a Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period and those below 20 ft^3/s (0.57 m^3/s), which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 104 ft^3/s (2.945 m^3/s), 7.76 in/yr (197 mm/yr), 75,350 acre-ft/yr (92.9 hm^3/yr); median of yearly mean discharges, 85 ft^3/s (2.41 m^3/s), 6.3 in/yr (160 mm/yr), 61,600 acre-ft/yr (76.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft^3/s (470 m^3/s) July 4, 1981, gage height, 23.14 ft (7.053 m); no flow Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft (7.0 m), discharge, about 15,000 ft^3/s (425 m^3/s) and flood of June 5, 1947 reached a stage of 21.65 ft (6.599 m), from floodmark, discharge, 11,000 ft^3/s (312 m^3/s). A discharge of 0.08 ft^3/s (0.002 m^3/s) was measured on Oct. 30, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft^3/s (34.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Apr. 14	1430	1,580	44.7	16.86	5.139
June 8	1030	2,800	79.3	18.47	5.630
June 15	1915	3,890	110	19.36	5.901
July 4	0900	*16,600	470	*23.14	7.053

Minimum daily discharge, 0.15 ft^3/s (0.004 m^3/s) Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	108	4.7	9.4	2.1	35	11	14	4.1	251	18	4.8
2	1.0	84	4.5	8.9	2.0	30	10	11	3.7	92	20	3.2
3	1.1	39	4.4	8.2	1.9	25	9.6	8.8	3.7	121	134	7.4
4	1.1	22	4.5	6.5	1.9	38	23	8.6	3.7	9990	63	6.1
5	.90	13	4.7	5.5	1.8	90	25	8.2	3.7	5330	35	4.2
6	.75	8.6	5.2	5.0	1.9	72	15	7.3	3.5	1850	24	3.4
7	.60	7.5	40	4.2	2.1	64	14	6.8	5.3	804	14	5.4
8	.33	6.8	700	3.8	2.0	40	15	6.0	2110	146	18	7.0
9	.18	6.2	446	3.2	2.1	29	13	4.9	1100	94	135	3.7
10	.15	5.3	392	2.9	2.0	25	12	5.5	851	48	18	3.0
11	.48	4.9	131	2.5	1.6	23	15	5.7	488	28	7.8	2.6
12	.78	4.9	65	2.2	1.5	22	187	5.5	62	19	5.7	1.2
13	.98	4.7	40	2.1	1.7	21	229	5.7	35	14	5.0	.97
14	1.1	6.3	29	2.0	2.5	19	1350	16	22	12	18	2.2
15	1.2	6.2	26	1.9	4.2	18	605	19	1760	151	12	1.8
16	1.8	6.1	23	2.0	20	17	609	11	2220	173	5.4	1.5
17	2.2	5.5	21	2.0	30	16	124	8.8	701	168	4.1	1.5
18	2.4	6.3	18	2.3	45	14	60	10	220	49	3.5	1.6
19	2.3	6.9	15	2.7	41	13	42	15	41	223	3.0	1.5
20	2.0	6.4	14	3.0	32	12	33	14	22	447	2.9	1.5
21	1.8	5.7	11	2.9	29	12	30	8.5	64	107	2.7	1.5
22	1.7	5.3	10	3.0	47	13	33	6.8	694	85	2.6	1.4
23	1.7	5.4	9.2	3.2	435	14	29	8.0	250	41	2.4	1.5
24	3.0	5.9	8.6	3.3	183	13	24	11	380	25	3.0	1.2
25	6.7	5.6	8.2	3.4	91	14	20	59	1310	19	4.6	1.8
26	13	4.9	7.4	3.7	54	15	18	56	532	17	6.5	2.7
27	21	4.0	7.8	3.4	42	15	15	29	264	23	7.8	2.4
28	21	4.4	8.2	3.1	40	14	14	12	49	107	4.8	2.7
29	27	4.7	8.0	2.9	---	15	14	8.4	36	49	4.1	2.6
30	50	4.9	8.8	2.5	---	16	13	6.3	211	52	3.4	2.4
31	75	---	9.1	2.2	---	14	---	4.8	---	31	9.4	---
TOTAL	244.35	409.4	2084.3	113.9	1120.3	778	3611.6	401.6	13449.7	20566	597.7	84.77
MEAN	7.88	13.6	67.2	3.67	40.0	25.1	120	13.0	448	663	19.3	2.83
MAX	75	108	700	9.4	435	90	1350	59	2220	9990	135	7.4
MIN	.15	4.0	4.4	1.9	1.5	12	9.6	4.8	3.5	12	2.4	.97
CFSM	.04	.08	.37	.02	.22	.14	.66	.07	2.46	3.64	.11	.02
IN.	.05	.08	.43	.02	.23	.16	.74	.08	2.75	4.20	.12	.02
AC-FT	485	812	4130	226	2220	1540	7160	797	26680	40790	1190	168

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CAL YR 1980   TOTAL   26951.92   MEAN   73.6   MAX   3120   MIN  .14   CFSM .40   IN 5.51   AC-FT  53460
WTR YR 1981   TOTAL   43461.62   MEAN  119     MAX   9990   MIN  .15   CFSM .65   IN 8.88   AC-FT  86210
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06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW1/4 SW1/4 sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft (6 m) downstream from bridge on county highway S50, 1.3 mi (2.1 km) downstream from Jordan Creek and 4.3 mi (6.9 km) northwest of Promise City.

DRAINAGE AREA.--168 mi^2 (435 km^2).

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City district office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft (278.496 m) NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 109 ft^3/s (3.087 m^3/s), 8.81 in/yr (224 mm/yr) 78,970 acre-ft/yr (97.4 hm^3/yr); median of yearly mean discharges, 96 ft^3/s (2.719 m^3/s), 7.8 in/yr (198 mm/yr) 69,600 acre-ft/yr (85.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,000 ft^3/s (793 m^3/s) July 4, 1981, gage height, 29.95 ft (9.129 m); no flow July 6, 7, 21-24, 28-31, and Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft (7.77 m), from floodmarks, discharge, about 18,000 ft^3/s (510 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft^3/s (56.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 8	1145	4,190	119	18.20	5.547	June 8	0530	3,290	93.2	16.18	4.932
Apr.12	1300	2,120	60.0	12.67	3.862	July 4	0915	*28,000	793	*29.95	9.129
Apr.14	1245	3,940	112	17.58	5.358	July 15	1345	3,790	107	17.38	5.297

Minimum daily discharge, 1.6 ft^3/s (0.045 m^3/s) Oct. 10,13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	43	6.0	13	3.7	52	11	9.2	3.1	69	5.5	4.0
2	2.5	22	5.2	10	3.5	43	8.5	8.2	2.9	28	22	4.4
3	2.2	16	4.6	8.2	3.4	35	8.7	7.8	2.8	108	139	3.6
4	2.1	10	4.7	7.0	3.2	111	46	8.1	2.5	21200	33	3.3
5	2.1	8.3	6.0	6.2	3.3	160	42	8.4	2.5	4160	18	3.5
6	2.1	7.4	7.9	5.7	3.3	95	21	8.2	2.3	249	20	3.1
7	1.9	8.1	415	5.6	3.2	63	15	6.9	41	119	14	13
8	1.9	6.6	3500	5.3	3.1	46	13	6.3	1380	82	14	10
9	1.7	6.1	505	4.7	3.0	37	14	7.4	119	62	13	6.6
10	1.6	6.0	155	4.1	2.9	54	84	8.7	42	49	9.5	4.1
11	1.8	5.8	100	3.8	2.7	45	656	8.2	23	42	7.6	3.2
12	1.8	5.0	62	3.7	2.8	37	1360	7.5	89	42	6.7	2.9
13	1.6	5.2	47	3.3	2.9	29	620	8.5	60	20	6.1	2.4
14	2.0	6.6	42	3.2	3.4	25	2880	47	19	14	44	2.3
15	2.8	7.5	37	3.1	5.4	25	322	51	2560	1220	42	2.1
16	4.0	8.0	34	3.2	11	21	134	18	1770	422	21	1.9
17	5.8	7.8	31	3.3	72	19	99	12	142	85	12	1.9
18	11	6.4	28	3.5	40	17	66	55	59	113	8.5	1.9
19	5.9	6.0	19	3.4	38	13	53	105	33	719	6.3	2.0
20	4.8	5.8	16	3.6	44	13	55	38	25	628	4.9	2.2
21	3.9	5.2	14	3.7	36	13	45	18	40	156	4.0	2.5
22	3.3	5.4	13	3.7	66	17	45	13	103	88	3.6	1.9
23	2.9	6.3	12	3.9	534	18	53	12	20	154	3.5	1.7
24	4.6	6.9	12	4.1	177	16	37	12	241	74	5.0	2.0
25	17	6.3	11	4.2	77	19	27	11	644	48	6.0	4.5
26	7.1	6.3	11	4.3	68	16	21	8.5	73	84	7.2	4.9
27	8.5	6.2	11	4.2	65	15	18	6.3	32	269	13	9.9
28	41	6.0	12	3.9	62	13	14	5.3	23	1030	11	5.6
29	50	6.2	12	3.7	---	17	13	4.8	64	97	7.1	3.6
30	37	6.4	13	3.6	---	20	11	4.0	355	21	5.5	2.8
31	65	---	14	3.6	---	17	---	3.4	---	8.9	4.9	---
TOTAL	302.2	258.8	5160.4	146.8	1339.8	1121	6792.2	527.7	7973.1	31460.9	517.9	117.8
MEAN	9.75	8.63	166	4.74	47.9	36.2	226	17.0	266	1015	16.7	3.93
MAX	65	43	3500	13	534	160	2880	105	2560	21200	139	13
MIN	1.6	5.0	4.6	3.1	2.7	13	8.5	3.4	2.3	8.9	3.5	1.7
CFSM	.06	.05	.99	.03	.29	.22	1.35	.10	1.58	6.04	.10	.02
IN.	.07	.06	1.14	.03	.30	.25	1.50	.12	1.77	6.97	.11	.03
AC-FT	599	513	10240	291	2660	2220	13470	1050	15810	62400	1030	234

CAL YR 1980 TOTAL 46133.25 MEAN 126 MAX 6780 MIN .96 CFSM .75 IN 10.22 AC-FT 91510
WTR YR 1981 TOTAL 55718.60 MEAN 153 MAX 21200 MIN 1.6 CFSM .91 IN 12.34 AC-FT 110500

06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi (2.9 km) north of Rathbun and 3.9 mi (6.3 km) upstream from Walnut Creek and at mile 142.3 (229.0 km).

DRAINAGE AREA.--549 mi² (1,421 km²).

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gages, 6 ft (2 m) wide and 12 ft (4 m) high, into forechamber of an 11-ft (3 m) diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft³/s (142 m³/s). Uncontrolled notch spillway is concrete overflow section 500 ft (152 m) in length, located about 3,000 ft (914 m) west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft (282 m), contents 552,000 acre-ft (681 hm³), surface area, 21,000 acres (8,499 hm²). Conservation pool level is at elevation 904.0 ft (275.54 m), contents 205,000 acre-ft (253 hm³), surface area, 11,000 acres (4,452 hm²). Reservoir is used for flood control, low-flow augumentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 402,000 acre-ft (496 hm³) May 8-10, 1973; maximum elevation, 918.15 ft (279.852 m) May 9, 1973; minimum daily contents, 100 acre-ft (0.123 hm³) Oct. 1-15, Nov. 17-21, 1969; minimum elevation, 855.40 ft (260.726 m) Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 393,000 acre-ft (485 hm³) July 21; maximum elevation, 917.58 ft (279.678 m) July 21; minimum daily contents, 203,000 acre-ft (250 hm³) Feb. 17; minimum elevation, 903.83 ft (275.487 m) Feb. 17.

Capacity table (elevation, in feet, and contents, in acre-feet)

860	400	880	33,800	900	164,300
862	850	885	55,730	905	216,600
865	2,390	890	84,530	910	278,500
870	7,950	895	120,000	915	351,000
860	18,100				

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228000	224000	222000	205000	204000	212000	206000	209000	207000	258000	377000	310000
2	227000	224000	222000	205000	204000	215000	205000	207000	207000	258000	376000	307000
3	227000	224000	219000	205000	204000	210000	205000	206000	207000	257000	375000	304000
4	227000	224000	217000	205000	204000	209000	207000	205000	207000	286000	373000	302000
5	226000	224000	216000	205000	204000	209000	207000	205000	207000	355000	371000	299000
6	226000	224000	215000	205000	204000	208000	206000	205000	207000	380000	369000	297000
7	226000	224000	214000	205000	204000	207000	206000	205000	207000	386000	367000	294000
8	226000	224000	219000	205000	204000	206000	206000	205000	209000	387000	364000	294000
9	226000	224000	226000	205000	204000	205000	206000	205000	214000	386000	363000	291000
10	226000	224000	229000	205000	204000	205000	206000	205000	218000	384000	362000	288000
11	226000	223000	228000	205000	204000	205000	207000	205000	219000	382000	360000	286000
12	225000	223000	226000	205000	204000	205000	209000	205000	221000	379000	357000	283000
13	224000	223000	223000	205000	204000	206000	212000	204000	222000	377000	355000	281000
14	224000	224000	220000	205000	204000	206000	217000	205000	223000	376000	353000	278000
15	224000	224000	217000	205000	204000	206000	223000	205000	223000	377000	351000	277000
16	224000	224000	215000	205000	204000	206000	226000	206000	231000	380000	349000	277000
17	224000	223000	212000	205000	203000	206000	228000	206000	240000	379000	346000	276000
18	224000	223000	209000	205000	204000	206000	228000	205000	242000	378000	344000	274000
19	224000	223000	207000	204000	205000	206000	226000	206000	242000	383000	341000	271000
20	224000	223000	205000	204000	205000	205000	225000	206000	241000	391000	338000	269000
21	224000	223000	205000	204000	205000	205000	223000	206000	239000	393000	336000	266000
22	223000	223000	205000	204000	206000	205000	222000	206000	240000	391000	333000	263000
23	223000	223000	205000	204000	209000	205000	222000	206000	240000	388000	331000	260000
24	224000	223000	206000	204000	211000	205000	220000	206000	241000	387000	328000	258000
25	224000	223000	[illegible]	204000	213000	205000	218000	206000	248000	385000	326000	258000
26	223000	223000	205000	204000	214000	205000	217000	206000	253000	382000	324000	258000
27	223000	223000	205000	204000	213000	205000	215000	206000	256000	381000	321000	257000
28	224000	223000	205000	204000	213000	205000	214000	206000	257000	383000	319000	255000
29	224000	223000	205000	204000	---	205000	212000	206000	257000	384000	317000	253000
30	224000	222000	205000	204000	---	206000	211000	206000	258000	382000	314000	251000
31	224000	---	205000	204000	---	205000	---	206000	---	380000	312000	---
MAX	228000	224000	229000	205000	214000	215000	228000	209000	258000	393000	377000	310000
MIN	223000	222000	205000	204000	203000	205000	205000	204000	207000	257000	312000	251000

WTR YR 1981 MAX 393000 MIN 203000

06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in SE1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, on left bank 600 ft (183 m) downstream from outlet of Rathbun Dam, 1.8 mi (2.9 km) north of Rathbun and 3.7 mi (6.0 km) upstream from Walnut Creek and at mile 142.1 (228.6 km).

DRAINAGE AREA.--549 mi² (1,421 km²).

PERIOD OF RECORD.--October 1955 to current year. Monthly discharge only for some periods, published in WSP 1730.

REVISED RECORDS.--WSP 1560: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft (258.446 m) NGVD. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960, to Sept. 30, 1969, recording gage, at site 3.1 mi (5.0 km) downstream at datum 4.66 ft (1.42 m) lower.

REMARKS.--Records good. Flow regulated by Rathbun Reservoir (station 06903880) since Nov. 21, 1969. Records of discharge include diversion of 13 ft³/s (0.37 m³/s) Oct. 1 to Nov. 5; 11 ft³/s (0.31 m³/s) Nov. 6 to Aug. 26; 17 ft³/s (0.48 m³/s) Aug. 27; and 18 ft³/s (0.51 m³/s) Aug. 28 to Sept. 30 from reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi (0.2 km) downstream from gage. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station. Rathbun Regional Water Association permit No. 3663 allows withdrawal from Rathbun Dam discharge immediately downstream from gage for maximum rate of 4,200 gpm (9.36 ft³/s) and maximum quantity of 638 million gallons per year (1,955 acre-ft).

AVERAGE DISCHARGE.--26 years, 318 ft³/s (9.006 m³/s) 7.87 in/yr (200 mm/yr), 230,400 acre-ft/yr (284 hm³/yr); median of yearly mean discharges, 240 ft³/s (6.80 m³/s) 5.9 in/yr (150 mm/yr), 174,000 acre-ft/yr (210 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft³/s (617 m³/s) Mar. 31, 1960, gage height, 25.3 ft (7.71 m), from floodmark, site and datum then in use; no flow Oct. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,510 ft³/s (42.8 m³/s) Dec. 11, gage height, 12.97 ft (3.953 m); maximum gage height, 15.80 ft (4.816 m) July 4, backwater from Walnut Creek; minimum daily discharge, 22 ft³/s (0.62 m³/s) June 13,14,16, July 4-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	42	819	40	38	875	36	799	31	812	1200	1220
2	40	42	877	39	38	874	36	799	31	819	957	1220
3	40	42	872	40	39	874	36	630	31	596	960	1210
4	41	41	865	40	39	876	36	35	31	22	1200	1210
5	40	40	863	39	39	876	36	34	31	22	1060	1210
6	40	36	861	39	39	875	36	35	31	22	1060	1210
7	40	35	951	40	39	873	36	34	23	228	1200	1010
8	63	37	1530	40	39	872	36	34	26	648	1190	1070
9	39	36	1110	40	39	259	36	34	31	1010	821	1200
10	40	36	1200	40	39	40	36	33	408	1180	1050	1200
11	41	37	1500	40	40	39	36	34	567	1210	1190	1200
12	42	37	1490	40	40	39	37	34	34	1200	1190	1200
13	41	40	1490	40	40	39	246	33	22	1210	1190	1200
14	42	37	1480	40	40	39	411	35	22	1210	1190	986
15	42	37	1470	40	40	38	834	33	28	908	948	40
16	43	37	1470	39	40	39	525	33	22	1110	1170	38
17	43	36	1470	40	40	39	676	33	447	957	1180	285
19	42	37	978	39	40	38	817	34	809	638	1190	1220
20	42	36	41	40	39	39	819	33	812	200	1190	1210
21	43	36	38	40	39	38	817	33	816	719	1180	1200
22	43	36	37	39	39	38	819	33	829	1210	1180	1200
23	44	37	39	39	39	38	821	33	824	949	1180	1200
24	44	36	40	39	39	38	817	32	174	1060	1180	982
25	44	37	39	39	69	38	817	32	389	1210	1180	364
26	44	36	39	38	292	40	816	32	23	1200	1180	214
27	45	36	38	39	580	37	814	32	23	922	1200	833
28	43	35	39	39	577	36	812	32	23	480	1230	833
29	42	36	39	39	---	37	807	31	62	1030	1230	833
30	42	36	39	39	---	36	802	31	163	1210	1230	1060
31	42	---	39	39	---	38	---	31	---	1200	1230	---
TOTAL	1326	1118	22920	1223	2461	5694	13419	3055	7567	25606	35536	29018
MEAN	42.8	37.3	739	39.5	87.9	184	447	98.5	252	826	1146	967
MAX	63	42	1530	40	580	876	821	799	829	1210	1230	1220
MIN	39	35	37	38	38	36	36	31	22	22	821	38
AC-FT	2630	2220	45460	2430	4880	11290	26620	6060	15010	50790	70490	57560

CAL YR 1980 TOTAL 106877 MEAN 292 MAX 1530 MIN 19 AC-FT 212200
WTR YR 1981 TOTAL 148943 MEAN 408 MAX 1530 MIN 22 AC-FT 295400

06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in SE1/4 NE1/4 sec.14, T.68N., R.17W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft (2 m) downstream from bridge on county highway J46, 0.7 mi (1.1 km) downstream from Hickory Creek, 5.0 mi (8.0 km) west of Moulton, 8.0 mi (12.9 km) upstream from Iowa-Missouri border, 20.8 mi (33.5 km) downstream from Rathbun dam, and at mile 121.8 (195.5 km).

DRAINAGE AREA.--740 mi² (1,917 km²).

PERIOD OF RECORD.--August 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft (243.840 m) NGVD (Corps of Engineers benchmark).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi (33.5 km) upstream. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,250 ft³/s (262 m³/s) July 5, 1981, gage height, 36.17 ft (11.025 m); minimum daily, 19 ft³/s (0.538 m³/s) Oct. 26, 1979 (corrected).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft (13.7 m), discharge unknown, from information by Corps of Engineers.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 9,250 ft³/s (262 m³/s) July 5, gage height, 36.17 ft (11.025 m); minimum daily, 23.0 ft³/s (0.65 m³/s) Feb. 13,14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	66	160	60	36	679	50	1930	34	1400	1210	1290
2	58	59	1050	58	34	661	46	1930	32	1100	1210	1280
3	49	55	1100	55	33	657	44	1930	32	2000	889	1270
4	46	51	1050	46	32	679	67	1930	28	7230	1150	1280
5	45	46	1000	43	31	703	84	1930	28	8380	1180	1270
6	45	42	1050	41	30	701	82	44	26	3630	933	1260
7	45	41	1080	39	29	660	58	43	27	1170	1170	1250
8	47	41	1100	38	29	639	55	42	829	817	1200	543
9	79	41	1050	37	28	582	56	43	895	942	1260	1270
10	62	39	1100	34	26	141	77	48	209	1220	901	1270
11	32	38	1600	31	25	81	104	44	653	1280	1170	1270
12	36	38	1650	30	24	76	247	42	635	1280	1180	1250
13	37	39	1700	30	23	68	351	42	494	1280	1190	1240
14	42	44	1750	29	23	63	1100	260	153	1280	1400	1240
15	43	40	1750	28	24	60	1960	239	681	1280	1350	509
16	48	38	1700	27	25	57	1960	105	854	1270	1220	86
17	49	37	1650	28	32	56	1950	70	254	1270	1200	69
18	43	34	1600	29	45	53	1950	669	732	1270	1220	791
19	41	34	1550	29	42	50	1950	537	761	1270	1210	1250
20	42	35	560	31	36	48	1950	183	740	1750	1210	1270
21	41	36	153	32	30	48	1950	106	815	1930	1200	1270
22	38	38	93	34	50	49	1950	80	1190	644	1200	1270
23	42	45	80	37	221	48	1950	71	790	644	1200	1260
24	66	49	72	40	839	47	1950	87	1150	644	1210	1250
25	55	42	66	42	517	46	1940	61	4470	644	1230	675
26	41	44	62	43	264	47	1940	53	1440	644	1230	327
27	49	43	60	43	638	48	1940	48	313	644	1220	588
28	109	43	59	41	707	45	1940	44	136	644	1260	855
29	104	44	60	39	---	46	1940	42	265	839	1270	861
30	87	45	59	38	---	50	1930	37	2200	1190	1280	897
31	81	---	58	37	---	52	---	34	---	1240	1280	---
TOTAL	1653	1287	26072	1169	3873	7240	33571	12724	20866	50826	37033	30611
MEAN	53.3	42.9	841	37.7	138	234	1119	410	696	1640	1195	1020
MAX	109	66	1750	60	839	703	1960	1930	4470	8380	1400	1290
MIN	32	34	58	27	23	45	44	34	26	644	889	69
CFSM	.07	.06	1.14	.05	.19	.32	1.51	.55	.94	2.22	1.62	1.38
IN.	.08	.06	1.31	.06	.19	.36	1.69	.64	1.05	2.56	1.86	1.54
AC-FT	3280	2550	51710	2320	7680	14360	66590	25240	41390	100800	73450	60720

CAL YR 1980 TOTAL 177773 MEAN 486 MAX 7280 MIN 25 CFSM .66 IN 8.94 AC-FT 352600
WTR YR 1981 TOTAL 226925 MEAN 622 MAX 8380 MIN 23 CFSM .84 IN 11.41 AC-FT 450100

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM		
					DATE	GAGE HEIGHT (FEET)	DIS-CHARGE (CFS)
		UPPER IOWA RIVER BASIN					
05388310	WATERLOO CR NR DORCHESTER, IOWA.	LAT 432704, LONG 913018, IN NW 1/4 SEC. 25, T.100 N., R.6 W., ALLAMAKEE COUNTY, ON STATE HIGHWAY 76, 1.4 MILES SOUTH OF DORCHESTER.	43.6	1966-	1981	A	(+)
		WEXFORD CREEK BASIN					
05388400	WEXFORD CR NR HARPERS FERRY, IOWA.	LAT 431622, LONG 910800, IN SE 1/4 SEC. 25, T.98 N., R.3 W., ALLAMAKEE COUNTY, AT BRIDGE, 5 MILES NORTH OF HARPERS FERRY.	11.9	1953-	08-05-81	9.01	5,800
		PAINT CREEK BASIN					
05388600	PAINT CR NR WATERVILLE, IOWA.	LAT 431024, LONG 911542, NEAR CENTER SEC.36, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE, 3 MILES SOUTHEAST OF WATERVILLE.	56.0	1953-	08-05-81	9.48	1,700
05388700	LITTLE PAINT CR TR NR WATERVILLE, IOWA.	LAT 431423, LONG 911507, IN SE 1/4 SEC. 1, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT CULVERT, 3.5 MILES NORTHEAST OF WATERVILLE.	1.09	1953-	02-22-81	1.71	110
		TURKEY RIVER BASIN					
05411530	NB TURKEY R NR CRESCO, IOWA.	LAT 432215, LONG 921249, IN NW 1/4 SEC. 25, T.99 N., R.12 ., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 9, ABOUT 5 MILES WEST OF CRESCO.	19.5	1966-	04-04-81	88.41	195
05411700	CRANE CR NR LOURDES, IOWA.	LAT 431457, LONG 921832, IN NW 1/4 SEC. 6, T.97 N., R.12 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 272, 1 MILE SW OF LOURDES.	75.8	1951-	08-31-81	10.60	2,600
		LITTLE MAQUOKETA RIVER BASIN					
05414350	LITTLE MAQUOKETA R NEAR GRAF, IOWA.	LAT 423009, LONG 905150, IN SE 1/4 SEC. 20, T.89 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 300 FEET DOWNSTREAM FROM ILLINOIS CENTRAL RR BRIDGE, 0.5 MILE NE OF GRAF.	39.6	1951-	06-15-81	13.15	4,700
05414400	MF LITTLE MAQUOKETA R NEAR RICKARDSVILLE, IOWA.	LAT 423338, LONG 905135, IN SE 1/4 SEC. 32, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 2 MILES SOUTHEAST OF RICKARDSVILLE.	30.2	1951-	06-15-81	16.07	1,000
05414450	NF LITTLE MAQUOKETA NEAR RICKARDSVILLE, IOWA.	LAT 423509, LONG 905120, NEAR NW CORNER SEC. 28, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 1 MILE NE OF RICKARDSVILLE.	21.6	1951-	06-15-81	6.03	640
05414600	LITTLE MAQUOKETA R TR AT DUBUQUE, IOWA.	LAT 423233, LONG 904138, NEAR NW CORNER SEC.11, T.89 N., R.2 E., DUBUQUE COUNTY, AT BRIDGE ON STATE HIGHWAY 386 NR NORTH CITY LIMITS OF DUBUQUE.	1.54	1951-	06-15-81	12.47	370
		MAQUOKETA RIVER BASIN					
05417000	MAQUOKETA RIVER NR MANCHESTER, IOWA.	LAT 422722, LONG 912556, IN NW1/4NE1/4 SEC. 9, T.88 N., R.5 W., DELAWARE CO., ON LEFT BANK, 0.6 MI DOWNSTREAM FROM SAND CREEK, 1.5 MI UPSTREAM FROM SPRING BRANCH, 2.3 MI SOUTHEAST FROM DAM ON MAQUOKETA RIVER IN MANCHESTER, AND AT MILE 100.5.	305	1933-73. 1976-	1981	14.59	8,830
05417530	PLUM CR AT EARLVILLE, IOWA.	LAT 422813, LONG 911453, IN NE 1/4 SEC. 1, T.88 N., R.4 W., DELAWARE COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1.5 MILES SOUTHEAST OF EARLVILLE.	41.1	1966-	09-26-81	88.22	4,000
05417590	KITTY CR NR LANGWORTHY, IOWA.	LAT 421204, LONG 911227, IN NW 1/4 SEC. 4, T.85 N., R.3 W., JONES COUNTY, AT BRIDGE ON U.S. HIGHWAY 151, ABOUT 1 MILE NE OF LANGWORTHY.	14.4	1966-	08-02-81	87.88	5,000

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DIS-CHARGE (CFS)
		WAPSIPINICON RIVER BASIN					
05420600	LITTLE WAPSIPINICON TR NR RICEVILLE, IOWA.	LAT 432131, LONG 922908, NEAR S 1/4 CORNER SEC.27, T.99 N., R.14 W., HOWARD COUNTY, AT CULVERT, 3.5 MILES EAST OF RICEVILLE.	0.90	1953-	05-24-81	4.86	400
05420620	LITTLE WAPSIPINICON R NR ACME, IOWA.	LAT 431937, LONG 922907, AT N 1/4 CORNER SEC. 10, T.98 N., R.14 W., HOWARD COUNTY, AT BRIDGE ON CO. ROAD, 1 MILE NORTH OF ACME.	7.78	1953-	07-12-81	4.88	300
05420640	LITTLE WAPSIPINICON R AT ELMA, IOWA.	LAT 431430, LONG 922704, IN NW 1/4 SEC. 12, T.97 N., R.14 W., HOWARD COUNTY, AT BRIDGE ON COUNTY ROAD B17, NEAR WEST CITY LIMITS OF ELMA.	37.3	1953-	1981	A	(+)
05420650	LITTLE WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 430358, LONG 922338, IN NW 1/4 SEC. 9, T.95 N., R.13 W., CHICKASAW COUNTY AT BRIDGE ON U.S. HIGHWAY 18, 4 MILES WEST OF NEW HAMPTON.	95.0	1966-	1981	A	(+)
05420690	EF WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 430811, LONG 921822, IN SE 1/4 SEC. 31, T.96 N., R.12 W., CHICKASAW CO. AT BRIDGE ON U.S. HIGHWAY 63, 2 MILES NORTH OF NEW HAMPTON.	30.3	1966-	1981	A	(+)
05420850	LITTLE WAPSIPINICON R NR ORAN, IOWA.	LAT 424253, LONG 920229, NEAR NW CORNER SEC. 8, T.91 N., R.10 W., FAYETTE COUNTY AT BRIDGE ON STATE HIGHWAY 3, 2 MILES NE OF ORAN.	4.1	1956-	06-23-81	88.07	1,350
05420855	BUCK CR NR ORAN, IOWA.	LAT 424253, LONG 920733, IN NE 1/4 SEC. 10, T.91 N., R.11 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 2.5 MILES NW OF ORAN.	37.9	1966-	09-26-81	89.19	900
05421100	PINE CR TR NR WINTHROP, IOWA.	LAT 422917, LONG 914710, IN SW 1/4 SEC. 27, T.89 N., R.8 W., BUCHANAN COUNTY, AT CULVERT, 1.4 MILES NORTH OF U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	0.334	1953-	09-26-81	8.07	260
05421200	PINE CR NR WINTHROP, IOWA.	LAT 422811, LONG 914701, IN SW 1/4 SEC. 34, T.89 N., R.8 W., BUCHANAN COUNTY, AT RR BRIDGE, 500 FT UPSTREAM FROM U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	28.3	1950-	09-26-81	13.83	1,250
05421300	PINE CR TR NO. 2 AT WINTHROP, IOWA.	LAT 422808, LONG 914433, AT N 1/4 CORNER SEC. 2, T.88 N., R.8 W., BUCHANAN COUNTY, AT CULVERT ON U.S. HIGHWAY 20 NEAR WEST CITY LIMITS OF WINTHROP.	0.704	1953-	09-26-81	6.67	180
05421550	BUFFALO CR ABOVE WINTHROP, IOWA.	LAT 422951, LONG 914342, NEAR NE CORNER SEC. 25, T.89 N., R. 8 W., BUCHANAN COUNTY, AT BRIDGE, 1.5 MILES NE OF WINTHROP.	68.2	1957-	09-26-81	18.94	8,000
05421600	BUFFALO CR NR WINTHROP, IOWA.	LAT 422807, LONG 914304, IN NE 1/4 SEC. 1, T.88 N., R.8 W., BUCHANAN COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1 MILE EAST OF WINTHROP.	71.4	1953-	09-26-81	90.30	8,200
05421890	SILVER CR AT WELTON, IOWA.	LAT 415454, LONG 903600, IN NW 1/4 SEC. 18, T.82 N., R.3 E., CLINTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 61 AT NORTH EDGE OF WELTON.	9.03	1966-	08-14-81	89.13	(+)
		IOWA RIVER BASIN					
05448400	WESTMAIN DRAINAGE DITCH 1 & 2 NR BRITT, IOWA.	LAT 430809, LONG 934704, IN SW 1/4 SEC. 27, T.96 N., R.25 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18 NEAR EAST CITY LIMITS OF BRITT.	21.2	1966-	06-24-81	82.28	(+)
05448600	EB IOWA R ABOVE HAYFIELD, IOWA.	LAT 430921, LONG 934121, NEAR S 1/4 CORNER SEC. 4, T.96 N., R.24 W., HANCOCK COUNTY, AT BRIDGE, 1.5 MILES SE OF HAYFIELD.	2.23	1953-	06-24-81	5.55	60
05448700	EB IOWA R NR HAYFIELD, IOWA.	LAT 431050, LONG 933920, IN NW 1/4 SEC. 35, T.97 N., R.24 W., HANCOCK COUNTY, AT BRIDGE, 2 MILES EAST OF HAYFIELD.	7.94	1952-	06-24-81	10.10	100
05448800	EB IOWA R NR GARNER, IOWA.	LAT 430617, LONG 933720, NEAR CENTER SEC. 25, T.96 N., R.24 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18, 1.2 MILES WEST OF GARNER.	45.1	1952-	06-24-81	9.46	410

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM		
					DATE	GAGE HEIGHT (FEET)	DIS-CHARGE (CFS)
		IOWA RIVER BASIN--CONTINUED					
05448900	EB IOWA R TR NR GARNER, IOWA.	LAT 430618, LONG 933929, NEAR EAST 1/4 CORNER SEC. 27, T.96 N., R.24 W., HANCOCK COUNTY, AT CULVERT ON U.S. HWY 18, 2.1 MILES WEST OF GARNER.	5.98	1952-	06-24-81	4.94	74
05451955	STEIN CR NR CLUTIER, IOWA.	LAT 420446, LONG 921800, IN NE 1/4 SEC. 24, T.84 N., R.13 W., TAMA COUNTY, AT BRIDGE ON STATE HIGHWAY 318, 5 MILES EAST OF CLUTIER.	23.4	1971-	08-25-81	70.16	310
05453200	PRICE CR AT AMANA, IOWA.	LAT 414818, LONG 915223, IN SE 1/4 SEC. 22, T.81 N., R.9 W., IOWA COUNTY, AT BRIDGE ON STATE HIGHWAY 149, NEAR NORTH EDGE OF AMANA.	29.1	1966-	02-25-81	83.95	2,200
05453600	RAPID CR BELOW MORSE, IOWA.	LAT 414345, LONG 912538, NEAR NE CORNER SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 1.5 MILES SE OF MORSE.	8.12	1951-	06-29-81	19.03	490
05453750	RAPID CR SW OF MORSE, IOWA.	LAT 414323, LONG 912616, IN W 1/2 SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 2 MILES SOUTHWEST OF MORSE.	15.2	1951-	06-29-81	24.80	1.050
05453850	RAPID CR TR NO. 3 NR OASIS, IOWA.	LAT 414233, LONG 912714, NEAR CENTER OF SEC. 29, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3.5 MILES WEST OF OASIS.	1.62	1951-	06-29-81	22.14	380
05453900	RAPID CR TR NR OASIS, IOWA.	LAT 414114, LONG 912637, NEAR SW CORNER SEC. 33, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SW OF OASIS.	.97	1951-	06-29-81	14.03	200
05453950	RAPID CR TR NR IOWA CITY, IOWA.	LAT 414156, LONG 912839, IN NW 1/4 SEC. 31, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 4 MILES NE OF IOWA CITY.	3.43	1951-	04-10-81	24.24	580
05455100	OLD MANS CR NR IOWA CITY, IOWA.	LAT 413623, LONG 913656, IN NW 1/4 SEC. 36, T.79 N., R.7 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SOUTHWEST OF IOWA CITY.	201	1950-64, 1965-	06-29-81	12.74	3,100
05455140	N ENGLISH R NR MONTEZUMA, IOWA.	LAT 413845, LONG 923420, IN SW 1/4 SEC. 14, T.79 N., R.15 W., POWESHIEK CO., AT BRIDGE, 5.0 MILES NORTHWEST OF MONTEZUMA.	31.0	1972-	06-34-81	23.24	1,150
05455200	N ENGLISH R NR GUERNSEY, IOWA.	LAT 413847, LONG 922347, NEAR SW CORNER SEC. 17, T.79 N., R.13 W., POWESHIEK COUNTY, AT BRIDGE, 2.2 MILES WEST OF GUERNSEY.	68.7	1953-	06-24-81	11.65	2,300
05455210	N ENGLISH R AT GUERNSEY, IOWA.	LAT 413842, LONG 922128, AT NW CORNER SEC. 22, T.79 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE SW OF GUERNSEY.	81.5	1960, 1966-	06-24-81	84.68	3,150
05455230	DEEP R AT DEEP RIVER, IOWA.	LAT 413529, LONG 922118, IN SW 1/4 SEC. 3, T.78 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE NE OF DEEP RIVER.	30.5	1960, 1966-	06-24-81	80.18	900
05455300	S ENGLISH R NR BARNES CITY, IOWA.	LAT 413126, LONG 922756, NEAR NW CORNER SEC. 34, T.78 N., R.14 W., POWESHIEK COUNTY, AT BRIDGE, 1 MILE NORTH OF BARNES CITY.	11.5	1953-	06-24-81	10.66	260
05455350	S ENGLISH R TR NO.2 NR MONTEZUMA, IOWA.	LAT 413402, LONG 922701, NEAR SW CORNER SEC. 11, T.78 N., R.14 W., POWESHIEK COUNTY, AT BOX CULVERT, 4 MILES SE OF MONTEZUMA.	0.523	1953-	06-24-81	10.50	86
05455550	BULGERS RUN NR RIVERSIDE, IOWA.	LAT 412902, LONG 913736, IN SE 1/4 SEC. 11, T.77 N., R.7 W., WASHINGTON CO., AT BRIDGE ON STATE HIGHWAY 22, 2.5 MILES WEST OF RIVERSIDE.	6.31	1965-	06-24-81	86.01	1,550
05457440	DEER CR NR CARPENTER, IOWA.	LAT 432454, LONG 925905, AT NW CORNER SEC. 9, T.99 N., R.18 W., MITCHELL , COUNTY, AT BRIDGE ON STATE HIGHWAY 105, 1.5 MILES EAST OF CARPENTER.	91.6	1966-	04-28-81	81.84	2,400
05458560	BEAVERDAM CR NR SHEFFIELD, IOWA.	LAT 425611, LONG 931209, AT NW CORNER SEC. 27, T.94 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 3 MILES NORTH OF SHEFFIELD.	123	1966-	06-24-81	56.35	1,950
05459010	ELK CR AT KENSETT, IOWA.	LAT 432218, LONG 931237, IN NE 1/4 SEC. 28, T.99 N., R.20 W., WORTH COUNTY, AT BRIDGE ON U.S. HIGHWAY 65, 1 MILE NORTH OF KENSETT.	58.1	1966-	04-28-81	91.40	720

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		IOWA RIVER BASIN--CONTINUED					
05459490	SPRING CR NR MASON CITY, IOWA.	LAT 431248, LONG 931238, IN SE 1/4 SEC. 16, T.97 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 4 MILES NORTH OF MASON CITY.	29.3	1966-	06-28-81	88.34	1,950
05460100	WILLOW CR NR MASON CITY, IOWA.	LAT 430855, LONG 931607, NEAR CENTER OF SEC. 12, T.96 N., R.21 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 18, 3.5 MILES WEST OF MASON CITY.	78.6	1966-	06-24-81	90.62	720
05462750	BEAVER CR TR NR APLINGTON, IOWA.	LAT 423440, LONG 925049, IN NW 1/4 SEC. 27, T.90 N., R.17 W., BUTLER COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 2 MILES EAST OF APLINGTON.	11.6	1966-	06-24-81	94.24	2,800
05463090	BLACK HAWK CR AT GRUNDY CENTER, IOWA.	LAT 422210, LONG 924605, IN NW 1/4 SEC. 7, T.87 N., R.16 W., GRUNDY COUNTY, AT BRIDGE ON STATE HIGHWAY 14, AT NORTH EDGE OF GRUNDY CENTER.	56.9	1966-	06-24-81	85.56	1,960
05464145	TWELVE MILE CR NR TRAER, IOWA.	LAT 421350, LONG 922756, IN SE 1/4 SEC. 27, T.86 N., R.14 W., TAMA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 2.5 MILES NORTH OF TRAER.	43.8	1966-	06-24-81	85.54	650
05464310	PRATT CR NR GARRISON, IOWA.	LAT 421053, LONG 921110, IN SE 1/4 SEC. 12, T.85 N., R.12 W., BENTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 218, 3.5 MILES NW OF GARRISON.	23.4	1966-	1981	A	<700
05464318	E BLUE CR AT CENTER POINT, IOWA.	LAT 421244, LONG 914721, IN SW 1/4 SEC. 33, T.86 N., R.8 W., LINN COUNTY, AT BRIDGE ON STATE HIGHWAY 150, 1.5 MILES NORTH OF CENTER POINT.	17.5	1966-	1981	A	(+)
05464560	PRAIRIE CR AT BLAIRSTOWN, IOWA.	LAT 415442, LONG 920503, IN SW 1/4 SEC. 13, T.82 N., R.11 W., BENTON COUNTY, AT BRIDGE ON STATE HIGHWAY 82, AT NORTH EDGE OF BLAIRSTOWN.	87.0	1966-	1981	A	<160
05464880	OTTER CR AT WILTON, IOWA.	LAT 413617, LONG 910208, IN NE 1/4 SEC. 35, T.79 N., R.2 W., CEDAR COUNTY, AT BRIDGE ON STATE HIGHWAY 38, 1.5 MILES NW OF WILTON.	10.7	1966-	09-26-81	88.65	780
05465150	NF LONG CR AT AINSWORTH, IOWA.	LAT 411651, LONG 913216, IN SW 1/4 SEC. 22, T.75 N., R.6 W., WASHINGTON CO., AT BRIDGE ON U.S. HIGHWAY 218, 1 MILE SE OF AINSWORTH.	30.2	1951, 1966-	04-14-81	86.60	1,000
		SKUNK RIVER BASIN					
05469860	MUD LAKE DRAINAGE DITCH 71 IN JEWELL, IOWA.	LAT 421852, LONG 933823, IN SW 1/4 SEC. 27, T.87 N., R.24 W., HAMILTON CO., AT BRIDGE ON U.S. HIGHWAY 69 IN JEWELL.	65.4	1966-	1981	A	(+)
05469990	KEIGLEY BR NR STORY CITY, IOWA.	LAT 420901, LONG 933713, IN NW 1/4 SEC. 26, T.85 N., R.24 W., STORY COUNTY, AT BRIDGE ON U.S. HIGHWAY 69, 3 MILES SOUTH OF STORY CITY.	31.0	1966-	1981	A	(+)
05472090	N SKUNK R NR BAXTER, IOWA.	LAT 414913, LONG 930341, IN NE 1/4 SEC. 21, T.81 N., R.19 W., JASPER COUNTY, AT BRIDGE ON STATE HIGHWAY 223, 4.5 MILES EAST OF BAXTER.	52.2	1966-	1981	A	<700
05472290	SUGAR CR NR SEARSBORO, IOWA.	LAT 413426, LONG 924420, AT EAST 1/4 CORNER SEC. 7, T.78 N., R.16 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 225, 1.8 MILES WEST OF SEARSBORO.	52.7	1966-	06-24-81	88.74	710
05472390	MIDDLE CR NR LACEY, IOWA.	LAT 412517, LONG 923504, NEAR NORTH 1/4 CORNER SEC. 1, T.76 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 1.5 MILES NW OF LACEY.	23.0	1966-	07-04-81	87.99	1,700
05472445	ROCK CR AT SIGOURNEY, IOWA.	LAT 412012, LONG 921320, IN NE 1/4 SEC. 3, T.75 N., R.12 W., KEOKUK COUNTY, AT BRIDGE ON STATE HIGHWAY 92, NEAR WEST EDGE OF SIGOURNEY.	26.3	1966-	06-24-81	89.49	1,250
05473300	CEDAR CR NR BATAVIA, IOWA.	LAT 410034, LONG 920706, IN SW 1/4 SEC. 27, T.72 N., R.11 W., JEFFERSON CO., AT BRIDGE ON U.S. HIGHWAY 34, 2.5 MILES NE OF BATAVIA.	252	1966-	04-14-81	88.64	15,500

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DIS-CHARGE (CFS)
		DES MOINES RIVER BASIN					
05480930	WHITE FOX CR AT CLARION, IOWA.	LAT 424355, LONG 934226, IN NW 1/4 SEC. 5, T.91 N., R.24 W., WRIGHT COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 1.5 MILES EAST OF CLARION.	13.3	1966-	06-24-81	91.81	800
05481510	BLUFF CR AT PILOT MOUND, IOWA.	LAT 420959, LONG 940115, IN NW 1/4 SEC. 20, T.85 N., R.27 W., BOONE COUNTY, AT BRIDGE ON STATE HIGHWAY 329, AT NW EDGE OF PILOT MOUND.	23.6	1965-	1981	A	(+)
05481680	BEAVER CR AT BEAVER, IOWA.	LAT 420204, LONG 940846, IN NE 1/4 SEC. 6, T.83 N., R.28 W., BOONE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, AT SW EDGE OF BEAVER.	38.5	1966-	1981	A	(+)
05481690	W BEAVER CR AT GRAND JUNCTION, IOWA.	LAT 420156, LONG 941238, IN NE 1/4 SEC. 3, T.83 N., R.29 W., GREENE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, NEAR EAST EDGE OF GRAND JUNCTION.	12.6	1966-	1981	A	(+)
05482600	HARDIN CR AT FARNHAMVILLE, IOWA.	LAT 421601, LONG 942510, NEAR NE CORNER SEC. 14, T.86 N., R.31 W., CALHOUN CO., AT BRIDGE ON STATE HIGHWAY 175, NEAR WEST CITY LIMITS OF FARNHAMVILLE.	43.7	1952-	07-03-81	8.00	255
05482800	HAPPY RUN AT CHURDAN, IOWA.	LAT 421016, LONG 942939, IN SW 1/4 SEC. 17, T.85 N., R.31 W., GREENE CO. AT BRIDGE NEAR WEST CITY LIMITS OF CHURDAN.	7.58	1952-	07-03-81	5.64	63.5
05482900	HARDIN CR NR FARLIN, IOWA.	LAT 420534, LONG 942539, NEAR N 1/4 CORNER SEC. 14, T.84 N., R.31 W., GREENE COUNTY, AT BRIDGE, 1.5 MILES NE OF FARLIN.	101	1951-	1981	A	(+)
05483318	BRUSHY FORK CR NR TEMPLETON, IOWA.	LAT 415645, LONG 945245, IN NW 1/4 SEC. 1, T.82 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES NE OF TEMPLETON.	45.0	1966-	1981	A	(+)
05483349	M RACCOON R TR AT CARROLL, IOWA.	LAT 420230, LONG 945243, IN NW 1/4 SEC. 36, T.84 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1.5 MILES SOUTH OF CARROLL.	6.58	1966-	06-29-81	22.83	(+)
05487350	S OTTER CR TR NR WOODBURN, IOWA.	LAT 410248, LONG 933526, NEAR SW CORNER SEC. 11, T.72 N., R.24 W., CLARKE CO. AT BRIDGE, 2 MILES NORTH OF WOODBURN.	0.71	1955-	06-07-81	14.06	1,670
05487600	S WHITE BREAST CR NR OSCEOLA, IOWA.	LAT 405736, LONG 934128, NEAR SW CORNER SEC. 12, T.71 N., R.25 W., CLARKE COUNTY, AT BRIDGE, 6 MILES SE OF OSCEOLA.	28.0	1953-	06-07-81	15.66	11,800
05487800	WHITE BREAST CR AT LUCAS, IOWA.	LAT 410124, LONG 932756, IN NE 1/4 SEC. 23, T.72 N., R.23 W., LUCAS COUNTY, AT BRIDGE ON U.S. HIGHWAY 65, NEAR SOUTH CITY LIMITS OF LUCAS.	128	1953-	05-22-69 09-11-72 02-02-73 10-11-73 04-25-76 05-12-78 07-04-81	16.98 16.58 16.68 17.51 16.68 16.66 18.27	8,800 7,300 7,700 11,000 7,700 7,600 15,500
05488620	COAL CR NR ALBIA, IOWA.	LAT 410102, LONG 925046, IN SW 1/4 SEC. 20, T.72 N., R.17 W., MONROE COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 2 MILES SW OF ALBIA.	13.5	1966-	07-04-81	82.56	(+)
05489150	L MUCHAKINOCK CR AT OSKALOOSA, IOWA.	LAT 411558, LONG 923833, IN SE 1/4 SEC. 25, T.75 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON STATE HIGHWAY 137, AT SOUTH EDGE OF OSKALOOSA.	9.12	1966-	06-24-81	88.08	1,200
05489350	S AVERY CR NR BLAKESBURG, IOWA.	LAT 410059, LONG 923732, IN SE 1/4 SEC. 19, T.72 N., R.15 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.5 MILES NORTH OF BLAKESBURG.	33.1	1965-	07-04-81	84.94	5,400
05489490	BEAR CR AT OTTUMWA, IOWA.	LAT 410043, LONG 922754, IN NW 1/4 SEC. 27, T.72 N., R.14 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, NEAR WEST EDGE OF OTTUMWA.	22.9	1965-	07-04-81	90.47	3.400

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM		
					DATE	GAGE HEIGHT (FEET)	DIS-CHARGE (CFS)
		FOX RIVER BASIN					
05494100	S FOX CR TR NR WEST GROVE, IOWA.	LAT 404331, LONG 923733, NEAR S 1/4 CORNER SEC. 31, T.69 N., R.15 W., DAVIS CO., AT CULVERT ON STATE HIGHWAY 2, 3.5 MILES WEST OF WEST GROVE.	0.55	1953-	07-04-81	8.11	370
05494110	S FOX CR NR WEST GROVE, IOWA.	LAT 404331, LONG 923616, IN SE 1/4 SEC. 32, T.69 N., R.15 W., DAVIS COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 2.4 MILES WEST OF WEST GROVE.	12.2	1965-	07-04-81	85.87	(+)
		BIG SIOUX RIVER BASIN					
06483410	OTTER CR NORTH OF SIBLEY, IOWA.	LAT 432741, LONG 954429, AT NE CORNER SEC. 25, T.100 N., R.42 W., OSCEOLA CO., AT BRIDGE ON COUNTY ROAD H, 4 MILES NORTH OF SIBLEY.	11.9	1952-	1981	A	(+)
06483420	SCHUTTE CR NR SIBLEY, IOWA.	LAT 432834, LONG 954638, NEAR NW CORNER SEC. 23, T.100 N., R.42 W., OSCEOLA COUNTY, AT CULVERT, 6 MILES NW OF SIBLEY.	1.43	1952-	06-14-81	9.02	(+)
06483430	OTTER CR AT SIBLEY, IOWA.	LAT 432414, LONG 954610, NEAR N 1/4 CORNER SEC. 14, T.99 N., R.42 W., OSCEOLA CO., AT BRIDGE, 1 MILE NW OF SIBLEY.	29.9	1952-	06-14-81	5.86	110
06483440	DAWSON CR NR SIBLEY, IOWA.	LAT 432323, LONG 954253, NEAR NW CORNER SEC. 20, T.99 N., R.41 W., OSCEOLA CO., AT CULVERT ON COUNTY ROAD D, 2 MILES SE OF SIBLEY.	4.35	1952-	06-14-81	6.68	(+)
06483450	WAGNER CR NR ASHTON, IOWA.	LAT 432045, LONG 954608, ON SOUTH LINE SEC. 35, T.99 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 3 MILES NE OF ASHTON.	7.09	1952-	1981	A	(+)
06483460	OTTER CR NR ASHTON, IOWA.	LAT 432007, LONG 954543, IN SE 1/4 SEC. 2, T.98 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 2 MILES NORTHEAST OF ASHTON.	88.0	1952-	06-14-81	8.15	660
06483495	BURR OAK CR NR PERKINS, IOWA.	LAT 431443, LONG 961038, IN SE 1/4 SEC. 5, T.97 N., R.45 W., SIOUX CO., AT BRIDGE ON U.S. HIGHWAY 75, 4 MILES NORTH OF PERKINS.	30.9	1966-	06-14-81	85.30	440
		PERRY CREEK BASIN					
06599800	PERRY CR NR MERRILL, IOWA.	LAT 424316, LONG 962033, IN NW 1/4 SEC. 12, T.91 N., R.47 W., PLYMOUTH CO., AT BRIDGE ON COUNTY ROAD M, 5 MILES WEST OF MERRILL.	8.17	1953-	06-14-81	10.15	(+)
06599950	PERRY CR NR HINTON, IOWA.	LAT 423757, LONG 962213, IN NE 1/4 SEC. 15, T.90 N., R.47 W., PLYMOUTH CO., AT BRIDGE, 4 MILES WEST OF HINTON.	30.8	1953-	06-14-81	38.68	(+)
		FLOYD RIVER BASIN					
06600030	L FLOYD R NR SANBORN, IOWA.	LAT 431110, LONG 954330, IN NE 1/4 SEC. 31, T.97 N., R.41 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 18, 3.5 MILES WEST OF SANBORN.	8.44	1966-	06-14-81	88.27	(+)
06600080	WILLOW CR AT HOSPERS, IOWA.	LAT 430438, LONG 955416, IN NE 1/4 SEC. 3, T.96 N., R.43 W., SIOUX CO., AT BRIDGE ON STATE HIGHWAY 60, AT NORTH EDGE OF HOSPERS.	37.9	1966-	06-14-81	85.81	(+)
		MONONA-HARRISON DITCH BASIN					
06601480	BIG WHISKEY SLOUGH NR REMSEN, IOWA.	LAT 424028, LONG 955321, IN NW 1/4 SEC. 11, T.92 N., R.43 W., PLYMOUTH CO., AT BRIDGE ON STATE HIGHWAY 3, 4.2 MILES EAST OF REMSEN.	12.9	1966-	06-14-81	92.57	620
06602190	ELLIOTT CR AT LAWTON, IOWA.	LAT 422830, LONG 961122, IN NW 1/4 SEC. 3, T.88 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, AT WEST EDGE OF LAWTON.	34.8	1966-	1981	A	(+)
06602240	BIG WHISKEY CR NR LAWTON, IOWA.	LAT 422830, LONG 961501, IN NW 1/4 SEC. 6, T.88 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, 3.5 MILES WEST OF LAWTON.	51.3	1966-	1981	A	(+)

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

					ANNUAL MAXIMUM		
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	GAGE HEIGHT (FEET)	DIS-CHARGE (CFS)
		LITTLE SIOUX RIVER BASIN					
06604510	OCHEYEDAN R NR OCHEYEDAN, IOWA.	LAT 432558, LONG 953641, IN NE 1/4 SEC. 6, T.99 N., R.40 W., OSCEOLA CO., AT BRIDGE ON STATE HIGHWAY 9, 4 MILES NW OF OCHEYEDAN.	73.5	1966-	1981	A	(+)
06605340	PRAIRIE CR NR SPENCER, IOWA.	LAT 430516, LONG 950940, IN SE 1/4 SEC. 36, T.96 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES SOUTH OF SPENCER.	22.3	1966-	07-04-81	88.80	400
06605750	WILLOW CR NR CORNELL, IOWA.	LAT 425821, LONG 950940, IN SE 1/4 SEC. 12, T.94 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 2 MILES NW OF CORNELL.	78.6	1966-	1981	A	(+)
06605890	WATERMAN CR AT HARTLEY, IOWA.	LAT 431106, LONG 953043, IN NE 1/4 SEC. 36, T.97 N., R.40 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 18, 1.8 MILES WEST OF HARTLEY.	28.7	1966-	1981	A	(+)
06606790	MAPLE CR NR ALTA, IOWA.	LAT 424456, LONG 952216, IN NE 1/4 SEC. 31, T.92 N., R.38 W., BUENA VISTA CO. AT BRIDGE ON STATE HIGHWAY 3, 6 MILES NW OF ALTA.	15.5	1966-	06-14-81	87.29	560
06607197	SIMMONS CR AT MAPLETON, IOWA. (FORMERLY WILSEY CREEK)	LAT 421020, LONG 954850, IN SE 1/4 SEC. 14, T.85 N., R.43 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 141, 1.2 MILES NW OF MAPLETON.	18.4	1966-	07-25-81	82.94	(+)
		SOLDIER RIVER BASIN					
06608450	JORDAN CR AT MOORHEAD, IOWA.	LAT 415459, LONG 955133, IN NW 1/4 SEC. 16, T.82 N., R.43 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 183, AT SW CORNER OF MOORHEAD.	30.1	1966-	1981	A	(+)
		BOYER RIVER BASIN					
06609560	WILLOW CR NR SOLDIER, IOWA.	LAT 415517, LONG 954205, NEAR NORTH 1/4 CORNER SEC. 11, T.82 N., R.42 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 37, 6 MILES SE OF SOLDIER.	29.1	1966-	07-25-81	71.65	(+)
		MOSQUITO CREEK BASIN					
06610510	MOSER CR NR EARLING, IOWA.	LAT 414635, LONG 952655, IN NE 1/4 SEC. 1, T.80 N., R.40 W., SHELBY CO., AT BRIDGE ON STATE HIGHWAY 37, 1.5 MILES WEST OF EARLING.	21.6	1966-	1981	A	(+)
06610600*	MOSQUITO CR AT NEOLA, IOWA.	LAT 412709, LONG 953637, IN NE 1/4 SEC. 19, T.77 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD S, 0.5 MILE SOUTH OF NEOLA.	131	1966-	05-04-81	22.77	(+)
		NISHNABOTNA RIVER BASIN					
06807418	GRAYBILL CR NR CARSON, IOWA.	LAT 411357, LONG 952251, IN NW 1/4 SEC. 7, T.74 N., R.39 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 92, 2 MILES EAST OF CARSON.	45.9	1966-	1981	A	(+)
06807470	INDIAN CR NR EMERSON, IOWA.	LAT 410150, LONG 952251, IN NW 1/4 SEC. 19, T.72 N., R.39 W., MONTGOMERY CO., AT BRIDGE ON U.S. HIGHWAY 34, 1 MILE EAST OF EMERSON.	37.3	1966-	1981	A	(+)
06807720	M SILVER CR NR AVOCA, IOWA.	LAT 412833, LONG 952806, NEAR N 1/4 CORNER SEC. 17, T.77 N., R.40 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 83, 7 MILES WEST OF AVOCA.	3.21	1955-	05-04-81	8.99	680
06807760	M SILVER CR NR OAKLAND, IOWA.	LAT 411928, LONG 953319, NEAR E 1/4 CORNER SEC. 4, T.75 N., R.41 W., POTTAWATTAMIE CO., AT BRIDGE, 8.5 MILES NW OF OAKLAND.	25.7	1953-	05-04-81	7.34	660
06807780	M SILVER CR AT TREYNOR, IOWA.	LAT 411437, LONG 953653, NEAR NE CORNER SEC. 1, T.74 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD F, 1 MILE NORTH OF TREYNOR.	42.7	1953-	1981	A	(+)
06808880	BLUEGRASS CR AT AUDUBON, IOWA.	LAT 414246, LONG 945543, IN NW 1/4 SEC. 28, T.80 N., R.35 W., AUDUBON CO., AT BRIDGE ON U.S. HIGHWAY 71, NEAR SOUTH EDGE OF AUDUBON.	15.4	1966-	1981	A	(+)

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1981--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DIS-CHARGE (CFS)
		TARKIO RIVER BASIN					
06811760	TARKIO R NR ELLIOT, IOWA.	LAT 410606, LONG 950609, NEAR NE CORNER SEC. 28, T.73 N., R.37 W., MONTGOMERY COUNTY, AT BRIDGE, 4.5 MILES SE OF ELLIOT.	10.7	1952-	1981	A	(+)
06811800	E TARKIO CR NR STANTON, IOWA.	LAT 410448, LONG 950534, IN W 1/2 SEC. 34, T.73 N., R.37 W., MONTGOMERY CO., AT BRIDGE, 7 MILES NORTH OF STANTON.	4.66	1952-	1981	A	(+)
06811820	TARKIO R TR NR STANTON, IOWA.	LAT 410238,LONG 950555, NEAR NE CORNER SEC. 16, T.72 N., R.37 W., MONTGOMERY COUNTY, AT BOX CULVERT, 4 MILES NORTH OF STANTON.	0.67	1952-	1981	A	(+)
06811875	SNAKE CR NR YORKTOWN, IOWA.	LAT 404433, LONG 950746, IN NW 1/4 SEC. 32, T.69 N., R.37 W., PAGE COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 1.5 MILES NE OF YORKTOWN.	9.10	1966-	1981	A	(+)
		NODAWAY RIVER BASIN					
06816290	W NODAWAY R AT MASSENA, IOWA.	LAT 411444, LONG 944527, IN EAST 1/2 SEC. 33, T.75 N., R.34 W., CASS COUNTY, AT BRIDGE ON STATE HIGHWAY 148, AT SE CORNER OF MASSENA.	23.4	1966-	1981	A	(+)
		PLATTE RIVER BASIN					
06818598	PLATTE R NR STRINGTOWN, IOWA.	LAT 405844, LONG 942939, IN SE 1/4 SEC. 2, T.71 N., R.32 W., ADAMS COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.8 MILES EAST OF STRINGTOWN.	51.7	1966-	04-12-81	90.81	1,250
06819110	MB 102 R NR GRAVITY, IOWA.	LAT 404940, LONG 944418, IN SE 1/4 SEC. 27, T.70 N., R.34 W., TAYLOR COUNTY, AT BRIDGE ON STATE HIGHWAY 148, 4.8 MILES NORTH OF GRAVITY.	33.5	1966-	1981	A	(+)
		CHARITON RIVER BASIN					
06903980	CHARITON R NR UDELL, IOWA.	LAT 404653, LONG 925012, IN NE 1/4 SEC. 17, T.69 N., R.17 W., APPANOOSE CO., AT BRIDGE, 5.0 MILES WEST OF UDELL.	631	1972-	07-04-81	859.37	6,400
06903990	COOPER CR AT CENTERVILLE, IOWA.	LAT 404502, LONG 925136, IN NW 1/4 SEC. 30, T.69 N., R.17 W., APPANOOSE CO., AT BRIDGE ON STATE HIGHWAY 5, AT NORTH EDGE OF CENTERVILLE.	47.8	1966-	07-04-81	79.49	5,060
06904040	CHARITON R AT COAL CITY, IOWA.	LAT 403535, LONG 924240, IN NE 1/4 SEC. 20, T.67 N., R.16 W., APPANOOSE CO., AT BRIDGE IN COAL CITY.	816	1972-	07-05-81	823.94	7,400

+ Discharge not determined.
A Peak stage did not reach bottom of gage.
B Ice affected.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1981

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³/s)
		Upper Iowa River Basin				
Bear Creek	Upper Iowa River	NE1/4 sec.2, T.99 N., R.6 W., Allamakee County, at bridge on State Highway 76, 3.0 mi (4.8 km) south of Dorchester.	118	1941-80	11-04-80 03-10-81 06-03-81 08-26-81	57.3 52.9 58.9 73.4
		Maquoketa River Basin				
Simmons Creek	Deep Creek	NW1/4 sec.16, T.83 N, R.5 E., Clinton County, at bridge on county road Z34, 2.5 mi (4.0 km) north of Goose Lake.	7.09	------	08-31-81	6,110
Sugar Creek	Deep Creek	NW1/4 sec.3, T.84 N., R.4 E., Clinton County, at bridge on county road about 1.7 mi (2.7 km) north of Delmar.	0.94	------	08-31-81	1,430
Sugar Creek tributary	Sugar Creek	NW1/4 sec.35, T.84 N., R.4 E., Jackson County, at bridge on county road, 2.5 mi (4.0 km) southwest of Spragueville.	3.50	------	08-31-81	5,060
Sugar Creek	Deep Creek	NW1/4 sec.36, T.84 N., R.4 E., Jackson County, at bridge on county road 2 mi (3.2 km) southwest of Spragueville.	20.3	------	09-01-81	12,000
		Des Moines River Basin				
Boone River	Des Moines River	SW1/4 sec.8, T.92 N., R.26 W., Wright County, at bridge on county road, 3 mi (4.8) km) southeast of Renwick.	315	-----	06-24-81	9,750
Cedar Creek	Des Moines River	SE1/4 sec.6, T.71 N., R.18 W., Monroe County, at bridge on county road, 4 mi (6.4 km) east of Melrose.	40.2	-----	07-04-81	13,400
EF Des Moines River	Des Moines River	NW1/4 sec.36, T.98 N., R.29 W., Kossuth County, at bridge on U.S. Highway 169, 2.0 mi (3.2 km) south of Bancroft.	357	------	06-24-81	533
EF Des Moines River	Des Moines River	NW1/4 sec.2, T.95 N., R.29 W., Kossuth County, at bridge on U.S. Highway 169, at Algona.	882	------	08-24-79 08-24-79 08-27-79 06-24-81	9,870 9,650 5,340 3,480
Middle Raccoon River	South Raccoon River	NW1/4 sec.2, T.81 N., R.33 W., Guthrie County, at bridge on State Highway 141, 1.2 mi (1.9 km) southeast of Coon Rapids.	224	------	07-23-79 03-20-80 06-29-81 06-29-81 06-29-81	2,140 74.9 1,500 1,680 1,870
Outlet Creek	Middle Raccoon River	NW1/4 NE1/4, sec.25. T.90 N., R.36 W., Buena Vista County, at bridge on east-west county road, 3.0 mi (4.8 km) southwest of Newell.	42.1	------	08-05-80	2.94
Prairie Creek	Boone River	SW1/4 sec.19, T.94 N., R.27 W., Kossuth County, at bridge on county road P60 about 1 mi (1.6 km) north of LuVerne.	83.8	------	06-24-81	3,750
Prairie Creek	Boone River	NE1/4 sec.23, T.93 N., R.27 W., Humboldt County, at bridge on county road C20, 2.5 mi (4.0 km) northwest of Renwick.	118	------	06-24-81	4,090
South River	Des Moines River	SE1/4 sec.2 T.74 N., R.25 W., Warren County, at bridge on county road about 4 mi (6.4 km) northeast of New Virginia.	92	------	07-04-81	21,700
South Squaw Creek	Squaw Creek	NW1/4 sec.6, T.72 N., R.25W., Clarke County, at bridge on county road 3 mi (4.8 km) northwest of Osceola.	16.0	------	07-03-81	8,460
Squaw Creek	South River	NW1/4 sec.32, T.73 N., R.26 W., Clarke County, at bridge on county road 7 mi (11.3 km) northwest of Osceola.	9.80	------	07-03-81	5,520
Squaw Creek	South River	SE1/4 sec.17, T.73 N., R.25 W., Clarke County, at bridge on county road 4 mi (6.4 km) south of New Virginia.	55	------	07-04-81	23,600
White Breast Creek	Des Moines River	SW1/4 sec.36, T.72 N., R.25 W., Clarke County, at bridge on county road about 5 mi (8.0 km) southeast of Osceola.	32	------	07-04-81	14,700

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1981 -- Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³/s)
		Little Sioux River Basin				
Ocheyedan River	Little Sioux River	NE1/4 sec.35, T.99 N., R.40 W., Osceola County, at bridge on road A30, 3.1 mi (5.0 km) northwest of May City.	121	------	04-07-81 05-19-81 07-02-81 08-11-81 09-23-81 11-04-81	6.69 2.78 11.0 2.08 1.47 3.38
Ocheyedan River	Little Sioux River	SW1/4 sec.1, T.97 N., R.39 W., O'Brien County, at bridge on road M20, 5.8 mi (9.3 km) northeast of Hartley.	233	------	04-07-81 05-19-81 07-02-81 08-11-81 09-23-81 11-04-81	23.4 12.1 34.4 12.4 8.80 16.6
Little Sioux River	Missouri River	Lat 43°08', long 95°08', in NW1/4 sec.18, T.96 N., R.36 W., Clay County, at bridge on U.S. Highways 18 & 71 at Spencer.	990	------	09-24-81	35.6
		Boyer River Basin				
Boyer River (06609400)	Missouri River	Lat 42°00'08", long 95°23'07", in NE1/4 sec. 16, T.83 N., R.39 W., Crawford County, at bridge, 2.0 mi (3.2 km) southwest of Denison.	517	1957-80	05-14-81 08-10-81 09-24-81	21.2 41.0 12.8
		Chariton River Basin				
Chariton River	Missouri River	NW1/4 sec.17, T.71 N., R.22 W., Lucas County, at bridge on county road 2.0 mi (3.2 km) northeast of Derby.	79	------	07-04-81	10,700
SF Chariton River	Chariton River	SE1/4 sec.5, T.69 N., R.21 W., Wayne County, at bridge on county road 3.5 mi (5.6 km) northeast of Corydon.	30.2	------	07-04-81	20,700

Carroll County

420335N0945215.1. Local number 84-35-25bdad*1. City of Carroll, test hole 1. Drilled observation artesian well in Dakota Sandstone of Early Cretaceous age, diam 8 in, depth 120 ft,cased to 100. Lsd 1,275 ft* above msl. MP top of casing, 4.0 ft above lsd. Highest water level 34.55 below lsd, Sept. 8, 1945; lowest 85.50 below lsd, July 15, 1981. Records available: 1939-49, 1952 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Dec. 1, 1980	70.50	Apr. 20, 1981	76.00	July 15, 1981	85.50	Aug. 7, 1981	78.78

*Elevation and location corrected 1981.

Cerro Gordo County

430456N0932536.1. Local number 95-22-3abbal. Knut Olson. Drilled domestic and stock artesian well in limestone of Devonian age, diam 4 in, depth 134 ft, casing information not available. Lsd 1,258 ft above msl. MP top of casing, 1.40 ft above lsd. Highest water level 14.34 below lsd, July 3, 1945; lowest 24.87 below lsd, Feb. 14, 1979. Records available: 1941-71, 1973 to current year.

Nov. 4, 1980	23.90	Jan. 27, 1981	24.68	June 4, 1981	24.28	Aug. 26, 1981	24.45

430806N0931645.1. Local number 96-21-13bccbl., Mason City & Clear Lake RR. Drilled unused artesian well in dolomite in Cedar Valley Limestone of Devonian age, diam 5 in, depth 198 ft, casing information not available. Lsd 1,165 ft above msl. MP top of well curb, 1.30 ft above lsd. Highest water level 1.73 below lsd, June 28, 1951; lowest 17.26 below lsd, Nov. 18, 1955. Records available: 1940-71, 1973 to current year.

Nov. 4, 1980	4.99	Jan. 27, 1981	4.20	June 4, 1981	5.45	Aug. 26, 1981	5.01

430658N0932810.1. Local number 96-22-20cadcl. W. Baine and H. Elder. Drilled unused water-table well in glacial drift, diam 5 in, depth 126 ft, casing information not available. Lsd 1,249 ft above msl. MP hole in side of casing, 0.87 ft above lsd (since Feb. 1980). Highest water level 29.65 below lsd, Mar. 25, 1942; lowest 51.37 below lsd, Aug. 4, 1977. Records available: 1940-71, 1973 to current year.

Nov. 4, 1980	41.42	Jan. 27, 1981	41.33	June 4, 1981	43.20	Aug. 26, 1981	42.41

Clayton County

424101N0913200.1. Local number 91-6-22acabl. Howard Bowman. Dug unused water-table well in glacial drift, diam 36 in, depth 18 ft, cribbed with brick. Lsd 1,221 ft above msl. MP top of board platform, 0.08 ft above lsd. Highest water level 3.54 below lsd, May 6, 1960; lowest 10.03 below lsd, Jan. 24, 1965 and Feb. 7, 1977. Records available: 1957 to current year.

Oct. 7, 1980	8.00	Dec. 7, 1980	8.55	Feb. 7, 1981	9.20	Apr. 7, 1981	7.24
Oct. 21	8.25	Dec. 21	8.59	Feb. 21	8.54		
Nov. 7	8.51	Jan. 7, 1981	8.79	Mar 7	7.40		
Nov. 21	8.42	Jan. 21	9.01	Mar 21	7.69		

well destroyed Apr. 1981

424057N0913200.1. Local number 91-6-22acacl. City of Strawberry Point, well 2. Drilled unused artesian well in dolomite of Silurian age and dolomite of Upper Ordovician age, diam 16 to 10 in, depth 492 ft, cased 16-in 0-130, 12-in 130-161, lined 10-in 229-370. Lsd 1,219 ft above msl. MP top of recorder platform, 2.10 ft above lsd. Highest water level 114.38 below lsd, May 9, 1973; lowest 133.18 below lsd, Feb. 4, 1968. Records available: 1963 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	127.33	127.45	127.57	127.93	128.10	127.39	127.71	126.68	127.37	127.04	127.12	126.87
10	127.14	127.68	127.75	128.30	128.11	127.61	127.24	126.52	127.55	127.20	126.85	126.58
15	127.43	127.67	127.44	128.12	128.37	127.04	127.38	126.76	127.61	127.29	126.91	127.13
20	127.57	127.44	128.12	128.23	128.22	127.43	126.57	127.11	127.26	127.18	126.85	127.08
25	127.40	128.01	127.87	127.64	127.97	127.60	126.20	127.25	127.28	127.50	127.15	127.10
Eom	127.47	127.10	127.98	128.06	127.48	127.19	126.51	e127.50	126.93	127.52	127.19	126.35

e Estimated

425940N0911947.1. Local number 95-4-32ddddl. Milton and Willis Meier. Drilled stock artesian well in St. Peter Sandstone of Middle Ordovician age, diam 6 in, reported depth 380 ft, Casing information not available. Lsd 1,090 ft above msl. MP plug in pumpbase, 1.00 ft above lsd. Highest water level 82.56 below lsd, Oct. 8, 1974; lowest 126.56 below lsd, Jan. 13, 1969. Records available: 1957 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Dec. 16, 1980	95.45	Mar. 11, 1981	96.97	June 3, 1981	96.82	Aug. 26, 1981	96.44

Des Moines County

404844N0911427.1. Local number 69-3-6aaba1. Iowa Ordnance Plant, well 3. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 16 in, depth 1,209 ft, cased 0-855. Lsd 717 ft above msl. MP top of platform, 1.61 ft above lsd. Highest water level 128.17 below lsd, July 6, 1981; lowest 201.75 below lsd, Aug. 15, 1978. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 25, 1980	139.84	Mar. 18, 1981	133.38	June 6, 1981	131.74	Aug. 10, 1981	129.37
Jan. 19, 1981	143.59	Apr. 14	128.74	July 6	128.17	Sept. 3	129.67
Feb. 13	134.67	May 18	131.08				

404753N0911425.1. Local number 69-3-6ddcd1. Iowa Ordnance Plant, well 2. Drilled unused artesian well in limestone of Devonian and Mississippian age, diam 19 in, depth 675 ft, cased 0-75. Lsd 699 ft above msl. MP top of platform, 1.91 ft above lsd. Highest water level 74.46 below lsd, Apr. 18, 1975; lowest 83.19 below lsd, Apr. 26, 1950. Records available: 1950 to current year.

Oct. 25, 1980	82.02	Mar. 18, 1981	81.64	June 6, 1980	81.59	Aug. 10, 1981	81.41
Jan. 19, 1981	81.92	Apr. 14	81.06	July 6	81.49	Sept. 3	81.26
Feb. 13	82.35	May 18	81.75				

Emmett County

432927N0943455.1. Local number 100-32-11dddd1. Okamanpedan Lake Reserve State Park. Drilled public-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 6 in, depth 277 ft, casing information not available. Lsd 1,233 ft above msl. MP plug in pumpbase, 0.61 ft above lsd. Highest water level 59.60 below lsd, Dec. 19, 1946; lowest 77.86 below lsd, Aug. 27, 1979. Records available: 1939 to current year.

Dec. 2, 1980	69.57	Feb. 18, 1981	69.98	May 19, 1981	70.58	Aug. 11, 1981	70.17

Grundy County

422605N0925600.1 Local number 88-18-15dbbb1.* Town of Wellsburg. Drilled public-emergency-supply artesian well in English River Siltstone, of Stainbrook (1950), of Early Mississippian age, diam 12 in, depth 280 ft, cased to 128. Lsd 1,060 ft above msl. MP edge of vent pipe, 1.25 ft above lsd. Highest water level 34.72 below lsd, May 6, 1980. lowest 96.81 below lsd, Sept. 27, 1960. Records available: 1960-71, 1973 to current year.
*Location corrected 1981.

Dec. 4, 1980	34.97	Feb. 25, 1981	34.85	June 2, 1981	34.75	Sept. 2, 1981	35.08

Henry County

405810N0913305.2. Local number 71-6-9aba2. City of Mount Pleasant, well 4. Drilled municipal artesian well in Jordan Sandstone of Late Cambrian age, diam 20 to 19 in, depth 1,860 ft, cased 20-in 0-623. Lsd 732 ft above msl. MP hole in pumpbase, 2.25 ft above lsd. Highest water level 132.00 below lsd, May 5, 1946; lowest non pumping 198.75 below lsd, June 7, 1978. Records available: 1946-50, 1953-57, 1959 to current year. Water levels affected by pumping.

Nov. 7, 1980	197.18	Sept. 9, 1981	p215.75				

p Well being pumped.

410848N0913948.1. Local number 73-7-9aabd1.* Town of Wayland. Dug unused water-table well in glacial drift, diam 4 ft, depth 52 ft, casing information not available. Lsd 735* ft above msl. MP top of cement cover, 0.21 ft above lsd. Highest water level 2.30 below lsd, Sept. 1, 1965; lowest 14.69 below lsd, Feb. 2, 1977. Records available: 1960 to current year.

Nov. 7, 1980	9.57	Apr 9, 1981	8.42	July 22, 1981	9.28	Sept. 17, 1981	12.09

*Elevation and location corrected 1981.

Jasper County

414205N0925920.1. Local number 80-18-31abbb1. P. W. Beukema. Dug stock water-table well in glacial drift, diam 36 in, depth 37 ft, cribbed with brick. Lsd 940* ft above msl. MP top of cement platform, 0.70 ft above lsd. Highest water level 2.67 below lsd, June 10, 1947; lowest 27.15 below lsd, Dec. 18, 1948. Records available: 1940 to current year.

Oct. 29, 1980	15.50	Apr. 13, 1981	17.00	June 24, 1981	17.70	Aug. 31, 1981	15.44
Jan. 30, 1981	19.08						

*Elevation corrected 1981.

Johnson County

414107N0913229.1. Local number 79-6-4aaaa1. Forest View Trailer Court. Drilled unused artesian well in limestone of Silurian age, diam 6 in, depth 280 ft, cased to 98 ft. Lsd 728 ft above msl. MP top of casing, 1.00 ft above lsd. Highest water level 98.93 ft below lsd, Mar. 23, 1979; lowest 146.01 ft below lsd, July 17, 1971. Records available: 1971 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	128.28	119.00	e106.00	e101.80	99.25	98.62	------	e117.30	126.32	128.31	128.88	------
10	127.48	121.28	e104.80	------	99.80	98.63	------	119.78	127.39	129.01	129.12	------
15	126.62	119.93	103.25	------	99.06	98.30	------	e121.35	128.16	128.74	129.27	------
20	126.02	114.30	103.30	------	95.19	98.90	------	------	128.9[illegible]	128.44	128.98	e129.00
25	125.72	110.68	e102.25	------	99.26	99.20	------	------	128.60	128.74	128.87	128.50
Eom	119.60	e100.50	101.12	100.10	99.10	98.77	114.68	e125.30	128.67	128.65	e129.05	127.30

e Estimated.

414315N0912820.1. Local number 80-5-22cbcb1. Chicago, Rock Island & Pacific RR. Co. Drilled unused water-table well in glacial drift, diam 1 1/4 in, depth 20 ft, screened 18-20 ft. Lsd 753 ft above msl. MP top of casing 4.20 ft above lsd. Highest water level 5.78 below lsd, Sept. 20, 1977; lowest dry, Dec. 2-31, 1958, Nov. 8 to Dec. 31, 1964. Records available: 1941-50, 1958 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1980	13.17	Jan. 22, 1981	14.88	Apr. 20, 1981	8.16	July 21, 1981	11.83
Nov. 18	16.88	Feb. 20	16.00	May 28	11.79	Aug. 19	5.96
Dec. 23	13.42	Mar. 18	12.33	June 23	11.27	Sept.22	13.53

414315N0912820.2. Local number 80-5-22cbcb2. Chicago, Rock Island & Pacific RR. Co. Drilled unused artesian well in limestone of Devonian age, diam 5 in, depth 82 ft cased. Lsd 753 ft above msl. MP top of casing 2.50 ft above lsd. Highest water level 8.15 below lsd, Apr. 21, 1952; lowest 21.05 below lsd, Sept. 28, 1987. Records available: 1941 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1980	17.19	Jan. 22, 1981	17.74	Apr. 20, 1981	15.74	July 21, 1981	17.12
Nov. 18	17.78	Feb. 20	18.07	May 28	17.05	Aug. 19	18.04
Dec. 23,	17.10	Mar. 18	17.83	June 23	17.01	Sept.22	17.84

Linn County

415422N0914228.1. Local number 82-7-10cdcd1. Lester Petrak. Dug unused water-table well in glacial drift, diam 4 ft, depth 14 ft, cribbed with brick. Lsu 715 ft above msl. MP base of recorder shelter, 0.25 ft above lsd, Oct. 1980. Highest water level 1.09 below lsu, Aug. 4, 1968; lowest e11.75 below lsd, Feb. 8, 1977. Records available: 1969 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	7.02	8.26	9.01	8.28	9.34	4.97	5.93	6.17	7.12	5.39	3.87	5.94
10	7.35	8.43	7.68	8.45	9.50	4.88	5.73	6.34	7.40	5.99	4.61	6.16
15	7.67	8.92	7.38	8.61	9.53	5.02	4.19	5.62	7.63	5.88	4.88	6.60
20	7.84	8.64	e7.49	8.62	e8.60	5.24	4.58	e6.01	6.49	5.43	5.03	5.90
25	7.98	8.78	7.69	9.02	6.00	5.99	4.83	e6.37	5.84	5.91	5.24	5.99
Eom	8.10	8.85	7.89	9.28	4.48	5.84	4.98	e6.80	5.43	5.02	5.49	4.58

e Estimated.

415816N0913934.1. Local number 83-7-26adda1. The Kacena Co., Inc. Drilled unused artesian well in limestone of Silurian age, diam 10 in, depth 420 ft, cased to 75. Lsd 735 ft above msl. MP top of recorder platform, 2.95 ft below lsd. Highest water level 51.10 below lsd, Feb. 25, 1963; lowest 101.40 below lsd, July 27, 1981. Records available: 1962 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	e88.30	-----	-----	94.90	95.65	96.83	97.67	98.10	100.07	101.09	100.48
10	-----	87.09	-----	-----	94.60	95.97	96.89	97.40	98.43	100.60	101.10	99.54
15	-----	87.85	-----	-----	95.05	95.34	e97.10	97.64	98.75	100.25	100.93	99.67
20	88.05	90.50	-----	e93.60	95.33	96.02	97.45	97.84	99.35	100.86	101.08	98.98
25	88.40	93.03	-----	e92.75	95.63	96.39	97.15	97.42	100.02	101.20	100.69	98.83
Eom	88.35	92.51	-----	94.45	95.92	95.90	97.42	97.07	100.17	101.37	100.28	98.30

e Estimated

Linn County--Continued

415725N0914104.1. Local number 83-7-32acdc1. Floyd Felter. 22nd Ave. SW. and 11th St. SW., Cedar Rapids. Drilled unused artesian well in limestone of Silurian age, diam 5 in, depth 282 ft, cased. Lsd 808 ft above msl. MP plug in well cover, at lsd. Highest water level 75.88 below lsd, Jan. 26, 1942; lowest 107.00 below lsd, Sept. 16, 1976. Records available: 1940 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1980	100.69	Jan. 22, 1981	97.70	Apr. 20, 1981	99.43	July 21, 1981	104.67
Nov. 18	100.81	Feb. 20	99.70	May 26	100.85	Aug. 19	102.78
Dec. 23	100.34	Mar. 18	98.91	June 23	102.74	Sept. 22	99.49

420526N0913707.1. Local number 84-7-13bcbb1. U.S. Geol. Survey. Drilled observation water-table well in glacial drift, diam 1 1/4 in, depth 17 ft, screened 15-17. Lsd 882 ft above msl. MP top of casing, 0.75 ft above lsd. Highest water level 1.11 below lsd, Mar. 29, 1960; lowest 12.90 below lsd, Dec. 3 1956. Records available: 1948 to current year.

Oct. 17, 1980	5.16	Jan. 22, 1981	5.02	Apr. 20, 1981	3.03	July 21, 1981	5.67
Nov. 18	5.32	Feb. 20	4.80	May 26	4.82	Aug. 19	4.59
Dec. 23	4.87	Mar. 18	3.81	June 23	4.74	Sept. 22	5.72

Lyon County

432140N0955953.1. Local number 99-44-26dddd1. State of Iowa. Drilled unused water-table well in glacial drift diam 20 in, depth 38 ft, lined with tile. Lsd 1,400 ft above msl. MP plug in well cover, 2.01 ft above lsd. Highest water level 0.41 above lsd, May 9, 1979; lowest 9.74 below lsd, Oct. 24, 1940. Records available 1940-43, 1947 to current year.

Oct. 30, 1980	3.78	Jan. 29, 1981	4.63	June 10, 1981	3.18	Sept. 3, 1981	2.78

432553N0961058.1. Local number 99-45-5abac1. City of Rock Rapids. Drilled unused artesian well in Dakota sandstone of Early Cretaceous age, diam 10 in, depth 375 ft, cased to 296. Lsd 1,360* ft above msl. MP plug in cover over casing, 1.00 ft above lsd. Highest water level 100.08 below lsd, July 27, 1954; lowest 114.07 below lsd, June 29, 1981. Records available: 1950 to current year.

Oct. 30, 1980	113.90	Apr. 22, 1981	113.26	June 10, 1981	113.88	Sept. 3, 1981	113.98
Jan. 29, 1981	114.07						

*Elevation corrected 1981.

Madison County

411727N0934830.1. Local number 75-26-23aaac1. Town of St. Charles, No. 1. Drilled unused artesian well in limestone of Mississippian age, diam 10 in, depth 1,058 ft, cased 0-657. Lsd 1,067 ft above msl. MP plug in well over, 1.20 ft above lsd (since Jan. 1, 1971). Highest water level 261.62 below lsd, Nov. 20, 1962; lowest 270.19 below lsd, Jan. 30, 1981. Records available: 1962 to current year. Records prior to April 1970 are from recording gage; subsequent records are periodic tape measurements.

Oct. 29, 1980	269.97	Jan. 30, 1981	270.19	Apr. 13, 1981	269.69	Sept. 30, 1981	269.04

Marion County

411323N0931428.1. Local number 74-21-11dbcd2.* Town of Melcher. Drilled unused water-table well in glacial drift, diam 18 in, depth 12.2* ft, lined with tile. Lsd 940 ft above msl. MP top of well cover, 0.78 ft above lsd. Highest water level 0.12 below lsd, Apr. 24, 1976; lowest 16.27 below lsd, Oct. 22, 1953. Records available 1950 to current year.

Oct. 11, 1980	7.09	Jan. 10, 1981	6.30	Apr. 10, 1981	5.01	July 10, 1981	4.95
21	7.07	Jan. 23	6.55	Apr. 22	3.49	July 22	5.40
Nov. 12	6.04	Feb. 10	5.90	May 10	3.47	Aug. 10	5.66
20	5.96	Feb. 26	4.82	May 23	3.98	Aug. 22	5.99
Dec. 10	5.29	Mar. 10	4.75	June 10	5.10	Sept. 10	6.20
Dec. 23	5.72	Mar. 24	5.37	June 23	5.85	Sept. 24	6.40

*Depth re-measured and location corrected in 1981.

Marshall County

420358N0925347.1. Local number 84-18-24cdca1. City of Marshalltown. Drilled unused artesian well in glacial sand and gravel of Pleistocene age, diam 8 in, depth 200 ft, cased to 190, screened 190-200. Lsd 871 ft above msl. MP top of casing, at lsd. Highest water level 4.92 below lsd, July 13, 1981; lowest 54.95 below lsd, May 8, 1981. Records available: 1949-71, 1973 to current year.

Dec. 4, 1980	44.00	Feb. 25, 1981	48.56	May 8, 1981	54.95		

Linn County--Continued

405835N0950129.1. Local number 71-36-6dada*1. State of Iowa. Drilled observation water-table well in glacial drift, diam 1 1/4 in, depth 38 ft, screened 36-38. Lsd 1,081 ft above msl. MP top oof casing, 3.02 ft above lsd. Highest water level 2.82 below lsd, May 31, 1951; lowest 30.99 below lsd, Apr. 26, 1950. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1980	14.98	Jan. 8, 1981	14.85	Apr. 3, 1981	14.58	Aug. 31, 1981	14.48
Oct. 20	15.18	Jan. 27	15.12	Apr. 30	14.47	Sept. 24	14.30
Nov. 10	14.96	Feb. 20	14.88	June 11	14.39		
Dec. 16	14.88	Mar. 13	14.72	July 20	14.87		

*Location corrected 1981.

Muscatine County

412120N0910804.4. Local number 78-2-30cbaa1. U.S. Geol. Survey. Drilled observation water-table well in alluvial sand and gravel, diam 6 in, depth 27 ft, screened 24-27. Lsd 546 ft above msl. MP base of recorder shelter 3.7 ft above lsd. Highest water level 8.51 below lsd, May 16, 1973; lowest 15.39 below lsd, Aug 10, 1980. Records available: 1966 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	14.35	14.56	e14.80	e14.36	14.62	e14.77	14.89	13.66	14.06	14.27	14.24	14.45
10	14.34	14.61	e14.90	e14.42	14.66	e14.80	14.91	13.68	14.13	14.34	14.22	14.52
15	14.39	14.66	e14.80	14.45	14.69	e14.82	e14.76	13.76	14.20	14.30	14.29	14.60
20	14.43	14.71	e14.60	14.51	14.71	e14.85	13.92	13.84	14.25	14.23	14.30	14.66
25	14.46	14.72	e14.50	14.54	e14.73	e14.87	13.76	13.91	14.26	14.28	14.36	14.72
Eom	14.52	14.74	14.30	14.58	e14.75	14.87	13.67	13.97	14.28	14.23	14.40	14.34

e Estimated

Page County

404257N0951512.1. Local number 68-38-7ccaa1.* William Brayman. Drilled unused water-table well in glacial drift, diam 12 in, depth 44 ft, lined with tile. Lsd 1,087 ft above msl. MP top of 3/4-in pipe inserted through board cover, 1.50 ft above lsd. Highest water level 1.44 below lsd, June 23, 1947; lowest 20.98 below lsd, Nov. 24, 1958. Records available: 1934 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 20, 1980	13.30	Jan. 13, 1981	13.91	Apr. 2, 1981	13.99	June 25, 1981	14.03
Dec. 1	13.72	Feb. 17	12.59	May 21	13.44	Sept.22	10.33

*Location corrected 1981.

Sac County

423013N0951753.1. Local number 89-38-26abaa1. City of Schaller. Drilled public-emergency-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 10 to 8 in, depth 352 ft, cased to 352, perforated 304-352. Lsd 1,376 ft above msl. MP edge of pump breather pipe, 1.80 ft above lsd. Highest water level 210.04 below lsd, Mar. 25, 1948; lowest 240.10 below lsd, May 24, 1977. Records available: 1940 to current year.

Dec. 3, 1980	229.57	Feb. 9, 1981	232.60	May 20, 1981	231.18		

Webster County

421837N0940836.1. Local number 87-28-29cccd1. Ransom Helms. Drilled unused water-table well in glacial drift, diam 12 in, depth 42 ft, lined with tile. Lsd 1,165 ft above msl. MP top of casing, 0.75 ft above lsd (since April 1978). Highest water level 0.05 below lsd, Aug. 1, 1972; lowest 13.62 below lsd, Mar. 12, 1956. Records available: 1942 to current year.

Oct. 20, 1980	5.88	Feb. 20, 1981	6.67	Apr. 21, 1981	4.82	June 23, 1981	3.64
Nov. 20	5.80	Mar. 11	6.82	May 8	3.83	July 21	2.63
Dec. 19	5.20	Mar. 20	6.54	May 20	4.82	Aug. 20	3.69
Jan. 20, 1981	6.86	Apr. 14	4.63	June 10	5.58	Sept. 21	4.24
Feb. 13	7.33						

423013N0942147.1. Local number 89-30-23ccbb1.* Johnson Township Consolidated School, Barnum. Drilled unused artesian well in sandstone of Cretaceous age, diam 4 in, reported depth 208 ft, cased to bottom, perforated 203-208, measured depth 203 ft. Lsd 1,174 ft above msl. MP top of casing, 1.03 ft above lsd. Highest water level 30.86 below lsd, July 2, 1945; lowest 52.60 below lsd, Feb. 26, 1980. Records available: 1942-45, 1947 to current year.

Nov. 26, 1980	44.00	Feb. 24, 1981	43.07	May 18, 1981	44.40	Aug. 12, 1981	43.46

*Location corrected 1981.

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	$2.54\text{x}10^{1}$	millimeters (mm)
	$2.54\text{x}10^{-2}$	meters (m)
feet (ft)	$3.048\text{x}10^{-1}$	meters (m)
miles (mi)	$1.609\text{x}10^{0}$	kilometers (km)
	Area	
acres	$4.047\text{x}10^{3}$	square meters (m^{2})
	$4.047\text{x}10^{-1}$	square hectometers (hm^{2})
	$4.047\text{x}10^{-3}$	square kilometers (km^{2})
square miles (mi^{2})	$2.590\text{x}10^{0}$	square kilometers (km^{2})
	Volume	
gallons (gal)	$3.785\text{x}10^{0}$	liters (L)
	$3.785\text{x}10^{0}$	cubic decimeters (dm^{3})
	$3.785\text{x}10^{-3}$	cubic meters (m^{3})
million gallons	$3.785\text{x}10^{3}$	cubic meters (m^{3})
	$3.785\text{x}10^{-3}$	cubic hectometers (hm^{3})
cubic feet (ft^{3})	$2.832\text{x}10^{1}$	cubic decimeters (dm^{3})
	$2.832\text{x}10^{-2}$	cubic meters (m^{3})
cfs-days	$2.447\text{x}10^{3}$	cubic meters (m^{3})
	$2.447\text{x}10^{-3}$	cubic hectometers (hm^{3})
acre-feet (acre-ft)	$1.233\text{x}10^{3}$	cubic meters (m^{3})
	$1.233\text{x}10^{-3}$	cubic hectometers (hm^{3})
	$1.233\text{x}10^{-6}$	cubic kilometers (km^{3})
	Flow	
cubic feet per second (ft^{3}/s)	$2.832\text{x}10^{1}$	liters per second (L/s)
	$2.832\text{x}10^{1}$	cubic decimeters per second (dm^{3}/s)
	$2.832\text{x}10^{-2}$	cubic meters per second (m^{3}/s)
gallons per minute (gal/min)	$6.309\text{x}10^{-2}$	liters per second (L/s)
	$6.309\text{x}10^{-2}$	cubic decimeters per second (dm^{3}/s)
	$6.309\text{x}10^{-5}$	cubic meters per second (m^{3}/s)
million gallons per day	$4.381\text{x}10^{1}$	cubic decimeters per second (dm^{3}/s)
	$4.381\text{x}10^{-2}$	cubic meters per second (m^{3}/s)
	Mass	
tons (short)	$9.072\text{x}10^{-1}$	megagrams (Mg) or metric tons

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